
Appendix A

RMP LEGISLATION

CHAPTER 26 OF 2003

AN ACT MAKING APPROPRIATIONS FOR THE FISCAL YEAR 2004 FOR THE MAINTENANCE OF THE DEPARTMENTS, BOARDS, COMMISSIONS, INSTITUTIONS AND CERTAIN ACTIVITIES OF THE COMMONWEALTH, FOR INTEREST, SINKING FUND AND SERIAL BOND REQUIREMENTS AND FOR CERTAIN PERMANENT IMPROVEMENTS.

Whereas, The deferred operation of this act would tend to defeat its purpose, which is immediately to make appropriations for the fiscal year beginning July 1, 2003, and to make certain changes in law, each of which is immediately necessary or appropriate to effectuate said appropriations or for other important public purposes, therefore it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

SECTION 79. Said chapter 21, as so appearing, is hereby amended by striking out section 2F and inserting in place thereof the following section:

Section 2F. The directors of the divisions of state parks and recreation and urban parks and recreation shall work in cooperation with the director of the division of fisheries and wildlife within the department of fish and game to establish coordinated management guidelines for sustainable forestry practices on public forest lands within the departments of conservation and recreation and on private forest lands. Said guidelines for public forest lands shall include agreements on equipment, personnel transfers, operational costs, and assignment of specific management responsibilities.

The commissioner of conservation and recreation shall submit management plans to the stewardship council for the council's adoption with respect to all reservations, parks, and forests under the management of the department, regardless of whether such reservations, parks, or forests lie within the urban parks district or outside the urban parks district. Said management plans shall include guidelines for the operation and land stewardship of the aforementioned reservations, parks and forests, shall provide for the protection and stewardship of natural and cultural resources and shall ensure consistency between recreation, resource protection, and sustainable forest management. The commissioner shall seek and consider public input in the development of management plans, and shall make draft plans available for a public review and comment period through notice in the Environmental Monitor. Within thirty days of the adoption of such management plans, as amended from time to time, the commissioner shall file a copy of such plans as adopted by the council with the state secretary and the joint committee on natural resources and agriculture of the general court.

The commissioner of conservation and recreation shall be responsible for implementing said management plans, with due regard for the above requirement.

Appendix B

PUBLIC PROCESS

Chestnut Hill Reservation Resource Management Plan Working Group Meeting Notes

PROJECT: Chestnut Hill Reservation Resource Management Plan

LOCATION: Brighton Marine Health Center

DATE: September 27, 2005

PRESENT: Wendy Pearl, DCR, Project Manager
Leslie Luchonok, DCR, Director, Resource Management Program
Kevin Hollenbeck, DCR, Supervisor Chestnut Hill Reservation
Lt. Susan Murphy, DCR Ranger
Marion Pressley, Pressley Associates
Gary Claiborne, Pressley Associates
Lt. Evans, Massachusetts State Police

Working Group Members:

George Chapman, Office of Representative Frank Smizik
Jay Cincotti, Office of Representative Moran
George Cole, Town of Brookline
Marianne Connolly, Massachusetts Water Resource Authority
Merrill Diamond, Diamond / Sinacori
Ruthanne Fuller, Chestnut Hill Association
Michele Hanss, Friends of the Houghton Garden
Malcolm Johnson, Aberdeen Brighton Residents Association
Thomas Keady Jr., Boston College
Heather Knopsyder, Allston/Brighton Community Development Corporation
Stan Kugell, Chestnut Hill Waterworks Community Task Force
Larry Loew, Aberdeen & Reservoir Civic Association
Joe Lawler, Boston Redevelopment Authority
Jean Leveque, Boston College
William Luzier, Office of Senator Steven A. Tolman
Bob Marks, Cleveland Circle Association
Carol Post Pfaelzer, Chestnut Hill Garden Club
Elaine Pierce, Friends of the Waterworks, Inc.
Paul Saner, Brookline Civic Association
Nick Sinacori, Diamond / Sinacori
Joseph Teller, Boston College Task Force
Eva Webster, Chestnut Hill Reservoir Coalition
Jill Ochs Zick, Boston Redevelopment Authority

INTRODUCTION

The meeting began with opening remarks from Leslie Luchonok welcoming the Working Group and reviewing the basics of the Resource Management Plan process. Leslie noted the change in the DCR project manager from Joanna Doherty to

Wendy Pearl and the resulting change in the overall project schedule. He also introduced the other members of DCR staff present and the representatives from Pressley Associates.

Wendy Pearl followed Leslie with a discussion of the meeting agenda and the basic ground rules for discussion. She also reviewed the project goals and the role of the Working Group in the Resource Management Plan (RMP) process¹.

PRESENTATIONS

Marion Pressley and Gary Claiborne of Pressley Associates followed Wendy with a PowerPoint presentation of the work done to date on the Chestnut Hill RMP. The presentation reviewed the RMP process and schedule, historic research and site inventory and analysis performed to date, and the various regulations/designations that govern any proposed changes or improvements to the Reservation. The presentation also included brief outline on the level of DCR on-site maintenance performed in the summer of 2005. All working group members received a hard copy of the presentation (attached).

Jill Ochs Zick of the Boston Redevelopment Authority (BRA) followed with an overview of the process for identifying and implementing public benefits projects as part of the agreement with the Waterworks developer. According to the agreement, the public benefit monies must be spent in the City of Boston, but may also be applied to Reservation lands. The Impact Advisory Group (IAG) for the project will convene soon to start the process, which will be supplemented by the Chestnut Hill Working Group process. Public benefit projects are usually completed by the developer prior to the issuance of a Certificate of Occupancy. It is expected that public benefit projects for the Waterworks development will be completed by 2007.

It was noted that a portion of the public benefit money has already been allocated for improvements to traffic signals at Cleveland Circle. Several Working Group members expressed concern about the BRA's allocation of funds, specifically that money has already been allocated without any public process.

DISCUSSION

The original meeting agenda called for break out groups to discuss challenges and opportunities in order to generate preliminary recommendations. However, it was the general consensus of Working Group members that they not be separated and that all topics should be discussed among the entire group. Marion Pressley moderated the discussion* while Leslie Luchonok, Wendy Pearl, and Gary Claiborne took notes on two large paper pads.

Discussion Topics

For the discussion period there was a pre-determined group of 3 general topics:

1. Maintenance, Management and Security
2. Reservation Gateways and Circulation
3. Treatment of Landscape and Site Features

*Although DCR and Pressley staff developed a series of questions to guide discussion around each topic, the conversation did not always adhere to this format. When applicable, the discussion questions are included here.

Discussion Topic 1: Maintenance, Management and Security **Security**

As a prelude to the security discussion, Lieutenant Susan Murphy, DCR Ranger, and Lieutenant Evans of the Massachusetts State Police (the law enforcement agency responsible for the Chestnut Hill Reservation) gave a brief statement on the role and jurisdiction of the State Police within the Chestnut Hill Reservation. According to Lt. Evans, there has been some level of coordination between the State Police and BC Police. Other points brought forth by Lt. Evans :

¹ It should be noted that attendance at the Working Group meetings is restricted to named representatives from the participating organizations. The Working Group meetings are not open to the general public, not to exclude individuals, but rather to allow for targeted discussion of the resource management planning process among a manageably sized group. Several public meetings will be held for the Chestnut Hill RMP, offering multiple opportunities for public comment.

- Crime – low activity (nothing on record since May 2005) – Note there was an attack on a BC student earlier this year.
- Security concerns raised in a BC newspaper article were discussed.
- Lighting may either present more or less problems within the Reservation.
- Most issues reported to police concern cars parked in or near the Reservation being broken into.

Issues/Opportunities

Regulations and Enforcement

- There is a lack of parking signage (24 hour parking) that creates problems with enforcement of official parking restrictions. State is working to correct this issue with updated parking signage.
- Reservation is officially closed at dark.

Coordination and Reporting

- Real vs. perceived criminal activity is an ongoing discussion for BC.
- As an agency with responsibilities in the area, MWRA is not officially notified of crimes and would appreciate being notified of such actions.
- BC only has police records on campus crimes. Crimes within the Reservation are officially handled by the State Police.
- DCR staff has been helpful in informing State Police of possible issues.
- There should be a level of coordination with BC in the handling of security issues since so many students actively use the Reservation. BC is concerned for its students whether they are officially off campus or not.
- The State Police and BC Police have talked to coordinate their efforts.
- At Houghton Garden, there has been a successful coordination with Newton Police to deal with issues in the Garden.
- State Police does not issue public notification of reported crimes.

Maintenance and Management

- Police have made requests for the removal of overgrown vegetation which they claim will improve enforcement and protection of the public.
- State Police would like additional controls in place to assist police in their enforcement activities.
- Lighting and its relationship to historic preservation issues.
- Lighting the Reservation will make it a destination at night.
- Lighting may create a false sense of security.

Maintenance

Issues/Opportunities

DCR and MWRA Responsibilities

- Shaft 7 (MWRA) is an integral part of MWRA water system. Marianne Connolly of the MWRA stated the Shaft is still and will remain an active part of the MWRA system. There is officially no public access to all 4 acres, and due to security issues (post-Sept. 11) the fence will remain closed.
- There should be a delineation for the actual limits of DCR maintenance.
- Maintenance decisions should be related to use.

Vegetation Management

- Clearance and maintenance of vegetation should be responsive to use and safety issues.
- There needs to be a balance between historic and natural resource preservation and management.
- There seems to be a lack of quality vegetation maintenance.
- Regeneration of existing vegetation should be a maintenance issue.
- One opinion was that there should be no additional maintenance until a plan is generated.

Discussion Topic 2: Reservation Gateways & Circulation

Question: *What are the primary gateways for the Reservation?*

1. From Newton, the Chestnut Hill Driveway/Beacon St. intersection is a main gateway. Overall, there is difficult pedestrian access from Newton.
2. From Boston, Cleveland Circle/ Commonwealth Avenue are the main gateways.
3. Parking by Gatehouse #1.
4. Embankment off Commonwealth Avenue.
5. From Boston College, access to the Reservation is mostly across Chestnut Hill Driveway (usually by the Shaft #7 property). There is a need for crosswalks to safely connect the campus and the Reservation.
6. From Brookline, access often comes from Reservoir Road. There is a lack of safe access across Beacon St. Is a pedestrian bridge across Beacon St that connects the Reservation to Waterworks possible?

Discussion then was directed towards issues with the existing steel picket fence that surrounds most of the Reservation.

Function of the Fence

- Fence now controls site pedestrian movement.
- As much as the fence keeps people out, it also keeps people in.
- Fence says “Stay out”.
- Fence provides a safety role particularly at the top of slopes.
- Fence also prevents undesirable pedestrian access down steep slopes, thus protected against potential erosion.
- The fence is an historic feature that provides for continuity of history.
- From the MWRA perspective, the fence no longer serves a purpose. The MWRA has no preference if the fence remains or is removed.
- The fence shows Reservoir’s stages of development and provides for site interpretation.
- From the DCR maintenance point of view, the fence is helpful in managing pedestrian traffic throughout the site.

Issues/Opportunities

- Fence is “ugly” and tends to take away the beauty from the site.
- Can it be a new or different fence?
- Preference for a more attractive fence to be used throughout the site.
- Should a 1929 fence actually be considered historic?
- Other fences were used prior to 1929.
- Some people consider the pre-1929 fence to be more historic than the 1929 fence.
- It is difficult maintaining vegetation growing at and near the existing fence.
- There is significant cost involved in either repairing or replacing the fence.
- The removal of fence may create unsightly desire lines around the site.
- Treatment of fence needs to tie into management goals.

Discussion Topic 3: Treatment of Landscape and Site Features

Landscape Treatment

Question: *What are the important Vistas and Landscapes?*

1. View of water (it is important to maintain a high water level).
2. Views both to and from Waterworks and the Cleveland Circle area.
3. From the Overlook along Chestnut Hill Driveway (selective clearing of vegetation below the Overlook is more desired).
4. Gatehouses #1 and #2 (these buildings preserve the scale of the landscape).
5. Sunrise/sunset.

Question: *What features currently detract from the overall reservation landscape?*

1. Eyesores around the Reservation include the lighting along Beacon Street. Any future lights should be directed down towards the street.
2. Another eyesore is the steel picket fence.

Question: How is existing landscape maintenance schedule?

1. No new clearing of existing vegetation without an approved vegetative management plan. There should just be maintenance of previously cleared areas.
2. Invasive material should be removed, especially at the fence.
3. Maintain “status quo” until a maintenance plan is approved.
4. Preserve vegetation buffers that currently block the apartment buildings north of the Reservation.
5. The landscape of the Reservation can either have a natural or managed feel.

Site Features

- There should be more benches and other sitting areas throughout the site.

Question: What are the possible Gatehouse #1 uses?

1. Water Based Recreation/Boathouse:
 - Leased to vendor.
 - Adds scale to view.
2. Café.
3. Only serving as a place to sit and enjoy view (provides a year-round use).
4. Non-use:
 - Non-use may be in the best interest of birders and naturalists.
 - Possible over-use of Reservation is a concern if gatehouse is re-used.
5. Open-air interpretive area.
6. Open-air concerts; view the concerts from existing parking area.

Question: Should the playground be rehabilitated or a different location be proposed for a new playground?

1. A playground should be in the best location to serve families and that may not be within the Reservation.

Question from Working Group member: Is the closure of Reilly Pool/Rink a possibility? Response: Potential closure of the Reilly Pool/Rink is not within the scope of RMP.

- Increase the buffer vegetation between the pool and Chestnut Hill Avenue.
- Improve overall visual quality of rink/pool through landscape improvements.
- There are many parking issues associated with the Reilly Pool/Rink.
- The RMP is scoped to include consideration of the operation of the Pool/Rink (parking, signage, etc.) but will not include specific recommendations about the building or operations.

WRAP UP/CONCLUSION

At the completion of the discussion period, the DCR staff asked the Working Group for meeting feedback and for suggestions on how to improve the presentation for the next public meeting.

Workshop Feedback

- Copy of discussion questions should have been issued to all parties at the beginning of the meeting.
- There should have been more talk about specific areas on the site.
- More time should be spent on maintenance issues.
- A clearer property boundary should be shown on presentation plans and maps.
- Instead of having one large site map, the map should be broken up into more detailed areas.
- The workshop had a good format.
- Agenda – make sure it is comprehensive (i.e. ownership clarification).
- Large group is better than break-out groups.

- Needed more specific questions.
- Better moderation would have kept the discussion on target and ensured no one got off tangent.

SUGGESTIONS FOR PUBLIC MEETING

- Attendance will be based on agenda, particularly if there is concern with BC acquisition issues. (Note: Jean Leveque of BC stated that BC is not interested in acquiring the main Reservoir property).
- Basics of the RMP and Reservation background information should be presented.
- Start of meeting should be after work hours (6 pm).
- No questions or comments during presentation.
- Moderator to control discussion.
- Open-house format – boards and other visuals should be placed around room prior to meeting.
- See if Circle Cinema is available.
- Limit meeting to a 1 1/2 to 2 hour format.
- Merrill Diamond offered to give a brief presentation on the current events at the Waterworks construction site.
- Have a map that visually shows Waterworks as a private development and no longer part of Reservation.
- Advertise meeting in Tab newspapers.
- Email Working Group members.

The Working Group meeting concluded at 7:05 pm with a thank you from the DCR staff to the Working group members. DCR committed to following up with meeting notes before the first public meeting, scheduled for late October.

Clarification Regarding Working Group Participation

At the beginning of the Working Group meeting there was some disagreement regarding attendance and public participation. Please note that the Chestnut Hill Reservation RMP will be subject to several public meetings, but the Working Group meetings are not open to the general public. Each participating organization has identified a sole representative to serve on the Working Group. When primary representatives are not available, substitutions are allowed, but the Project Manager must be informed of the change 24 hours before the meeting.

Chestnut Hill Reservation Resource Management Plan Public Meeting #1 Notes

PROJECT: Chestnut Hill Reservation Resource Management Plan

LOCATION: Circle Cinemas

DATE: November 29, 2005

PRESENT: Wendy Pearl, DCR, Project Manager
Leslie Luchonok, DCR, Director, Resource Management Program
Stephen H. Burrington, DCR Commissioner
Kevin Hollenbeck, DCR, Supervisor Chestnut Hill Reservation
Lt. Susan Murphy, DCR Ranger
Marion Pressley, Pressley Associates
Gary Claiborne, Pressley Associates

Representative Kevin Honan
Representative Michael Moran
Staff from the Office of Representative Smizik
Staff from the Office of Senator Tolman.

OPENING BY WENDY PEARL

The meeting began with opening remarks from Wendy Pearl welcoming the public to the meeting. Steve Burrington, DCR Commissioner, was then introduced.

WELCOME BY COMMISSIONER STEPHEN BURRINGTON

Mr. Burrington remarks referred to the Resource Management Plan as a “user manual” to guide the future management and operations of the Reservation. It will become a common reference point going into the future. The RMP will guide everything from daily maintenance in the Reservation to large capitol projects. He stressed the role that the public has in shaping the final product of the RMP. This RMP will be the one of the first of the many RMPs required for all DCR properties. He stated that the DCR is now in a new committed direction that will make the DCR and its operations more transparent and open to the public.

INTRODUCTION TO THE RMP BY WENDY PEARL

Wendy Pearl followed Mr. Burrington with a discussion of the meeting agenda, the RMP process, the project schedule, and the basic ground rules for discussion following the presentation. She also invited members of the Working Group to stand.

The goal of the RMP is balance – recreation, natural resources, historic resources – and sustainability

The Resource Management Plan will be a tool for the future management of Chestnut Hill Reservation and will help to:

- Define a vision for the park
- Describe management goals that balance recreation, natural and historic resource protection
- Identify actions to achieve specific goals
- Lay the groundwork for sustainable maintenance and operations
- Bring communities together around a common vision for the reservation

The scope of the plan includes

- Inventory and analysis of existing conditions
- Development of Management Recommendations
- Implementation Plan identifying Early Action Projects

- Maintenance Plan

The RMP may also show a need for additional planning or design around a specific management goal. This might include Master Planning.

Schedule

The current schedule has been provided on the back of tonight's agenda.

At each milestone of this project DCR will be looking for public input, both through the work of the Working Group and through other public meetings such as this one

You can see that we expect to see the draft Resource Management Plan in late January/early February

Parallel to the planning process will be the identification and design of early action projects.

By fall of 2006 we expect to have a completed Resource Management Plan ready for adoption by the DCR Stewardship Council AND completed designs for early action projects.

Working Group

This public participation process is supplemented by meetings of a Working Group.

The Working Group is an advisory body made up of a representative from a variety of non-profits, civic and neighborhood groups along with state and local government.

The Working Group met in January to jump start the planning process with a discussion of the future of the Reservation, short and long term goals, management challenges, and the scope of the plan. They also met this September.

DCR appreciates the commitment of the Working Group members.

Management Theme

The consultant, Pressley Associates and their team have been working since July to document the existing conditions at the Reservation and start to identify the issues around recreation, management, maintenance, and resource protection.

Based on the consultant's preliminary findings and the input of the Working Group, DCR has developed this statement which we are calling the Management Theme for the Reservation.

"Chestnut Hill Reservation will be a welcoming, urban oasis that provides safe access to recreation and solitude within a sustainable, natural, and historical landscape. It is a public open space connecting local communities and serving a diverse group of users.

The management of Chestnut Hill Reservation benefits from the support and advocacy of a network of non-profit groups, volunteers, local institutions and civic organizations."

The DCR hopes this statement can evolve into the shared vision for Chestnut Hill Reservation.

PRESENTATION OF PRELIMINARY FINDINGS BY MARION PRESSLEY, PRESSLEY ASSOCIATES

Marion Pressley of Pressley Associates followed Mrs. Pearl with a PowerPoint presentation of the Preliminary Findings on the Chestnut Hill RMP. The presentation reviewed the project boundary and scope, issues studied as part of the existing conditions inventory and analysis process, a brief review of the site history, property designations, and the "Issues and

Opportunities.” The topics covered in the “Issues and Opportunities” were Maintenance and Management, Gateways and Circulation, and Landscape Treatment.

A copy of the PowerPoint presentation is attached.

DISCUSSION

Following the presentation, the discussion period began with Leslie Luchonok moderating. Verbal questions and comments were taken and responses given by the DCR staff and Marion Pressley.

1. Anatole Zuckerman – ARCA; Mass.Club of Russian Scientists - *When did DCR begin working on this project? How much money has been allocated towards this project? So you’ve spent 6 months and \$125,000, and 4 boards is all you have to show for it?*

DCR began work in December 2004, and the consultant contract awarded in July 2005.

\$125,000 – Leslie ran through the amounts contributed by whom.

Leslie and Marion clarified that the money has not been completely spent to date and that these were not the final products.

2. Dan O’Donnell -*Has not heard anything mentioned about the community garden yet in these presentations, but had heard that a building that is associated with the garden was to remain for this purpose in perpetuity. He would like to see it remain as such. Other concerns include the issues that the community garden has in getting water to the site, and the lack of general/visitor (non-resident permit) parking along Chestnut Hill Drive, and feels this is constricting for visitors.*

Marion indicated that they need more information on the Community Gardens – woman who represents them and is on the working group identified herself (Beverly Ross).

3. Mary MacElroy – *Is there any commitment from the legislature to fund the recommendations from this plan once created?*

Commissioner – no, but assembling this information on the reservation and having a clear picture of our needs will help us work with the legislature. Leslie – It will help DCR begin to address some of the capital improvements.

4. Joseph Teller – *He has seen too many plans drawn that have not been funded, and feels that not having a funding commitment to make improvements will be a disappointment. While it is nice to have design work completed, the lack of a funding component makes implementation chancy, and a commitment to action is needed.*

Marion – as maintenance needs are further expressed, and our ability to address them in house through our staffing and equipment some elements will be able to come to light. Wendy – An operations plan will also include exploring funding opportunities.

Kevin Hollenbeck - the RMP will include small projects (new paving, signs, benches, etc.) that can be accomplished by DCR staff in addition to the larger projects. Kevin needs the RMP to guide him and his staff on these smaller projects.

5. Question from comment card: What are the eyesores mentioned in the presentation.
Marion Pressley - she has her opinions of the eyesores but she is looking for suggestions from the public, particularly in regards to the fence.

6. Joanne Wright – *Two cars are parked on Chestnut Hill Dr that appear to be abandoned. Can they be removed, or do they have to wait for the registration to expire? Can lines be painted in the parking area to assure no loss of parking space due to sloppy parkers?*

Kevin – if the vehicle plates can be submitted to DCR, he will monitor them.

Marion – parking and lines for parking spots will be part of their review.

7. (Russian speaker – Mr. Kryzman?) As translated by Anatole Zuckerman: *To prevent a WWII, we need to remember WWII, and one way to do that is to build a memorial to WWII veterans, so that future generations will know about WWII and this will remind us to be vigilant of future wars.*

8. George Hughes – *It would be nice to review the draft report online before the next public meeting. A website for questions/comments/FAQs would also help tremendously.*

Wendy – the address for the project website can be found on the backside of the agenda. Draft products, future announcements and blank survey forms are also located there. FAQs are a great idea, and may also be posted there.

9. Wendy Barnett – *Other plans that were done in the past – what happened to them and can we see them? With regards to the fence, if it is in disrepair and not functional, I say remove it. Other small projects such as this would be helpful and have visual impact. When do you think you can go to the legislature and request funding? Final comment – her highest priority for the area is safety.*

Marion – the 1977 plan resulted in the fence segment installation, and the playground, but no master plan was completed. The prior plan stated earlier in the discussion was meant in a general way, not specific to this property. Wendy – probably cannot approach the legislature until the final plan is completed – in the summer of 2006. Marion estimated that the final plans should be in place by September.

10. Elaine Pierce – *2 comments – 1. She feels the fence is an eyesore given its current condition – she would advocate for its removal as was done at the Brookline reservoir. However she agrees that partial retention to block certain areas from misuse would be helpful, but that it should otherwise be removed. 2. She hopes that the plan will address the wide variety of recreational uses of the reservation and incorporate them.*
11. (Russian speaker – Mr. Bordanka?) As translated by Anatole Zuckerman: *Reminder that this meeting is historic – their group has plans to place a memorial in this park and have the funds to do so. Are you willing to allow us to build our WWII memorial in this park as we have proposed for the past 2 years? Let us remind the state reps and the DCR staff what their role is in serving this community. (Charlie Chaplin quote.) Businessman of the local Russian community can fund this project.*

Eva Webster requested to Leslie that he put a hold on this line of questioning.

Wendy – DCR is developing a policy for all memorials therefore this question cannot be answered at this time while the policy is still in the works.

12. (Roger Blood, Brookline WG Rep) *He would like it to be stated in the plan that this reservoir would not be filled in for any purposes whatsoever.*
13. (Charles River Watershed Association) *What kind of watershed analysis has occurred to date and/or are there plans for any protection as the process moves forward? Maintenance with regard to watershed issues (stormwater, catch basin cleaning, etc.) when will these issues be looked at and start to be implemented?*

Marion – We are looking at these issues and will be addressing them in the recommendations. MWRA can speak to the water quality.

Marianne Connolly – The reservoir is a back up water supply,, therefore MWRA is still responsible for water levels and will cooperate with regards to stormwater management recommendations and with DCR as part of the cooperative agreement between these 2 agencies.

14. (woman from the Mass. Club of Russian Scientists) – *Wanted to state that she feels it is wonderful that we can have a public meeting and work towards making decisions together.*
15. John Ellison (a local runner) – *Placing asphalt on the exterior path might help to protect the inside path and direct users to that exterior path. Is there anyway to get Beacon St sidewalk expanded in width to serve people, control traffic and eliminate erosion? Finally, what are the plans for further involvement of BC (given their 25k contribution to this plan) and what is the status of the parcel on Thomas Moore Rd (shaft 7)?*

Marianne Connolly – the MWRA needs this 4 acre parcel and has notified BC of the need to maintain this area for water distribution and supply purposes.

Leslie then stated that any change in use would take a 2/3 votes of the legislature as per Article 97 regulations; no further funding from BC planned.

Marion – question to the crowd – do we even need to maintain these 2 paths? What surface types would be most useful? (She noted that at Jamaica Pond, runners still avoid resilient surface and create more problems.) Surfacing will be looked at and considered with regards to their suitability.

16. Carol Seagle (recreational user) – *Would like to endorse retention of the exterior pathway along Beacon St – and have the drainage problems corrected in the process so that it doesn't flood so much. Two pathways may be needed in some areas, but especially where there are flooding issues. The pathway by Gatehouse #1 and the playground is very overgrown with brush, making it uncomfortable –could this be cleared, but in a way that keeps it naturalistic?*

Marion – a lot of the brush issues will be dealt with through maintenance recommendations.

17. Charlie Vasiliades (WG) – *He would love to see the fence removed. Access to water is his draw to the reservation. He likes community process, and maintaining a naturalistic environment.*
18. Fred Hathaway? (walker) – *Occasionally notices trash – not sure if it is removed by park clean up or it is being tossed into the reservoir. Is junk piling up in the reservoir an issue for water quality?*

Kevin – If you see trash, call him so that it can be picked up. Leslie – to the extent that there is unknown trash is an interesting question – will look into it.

19. Bill Marchione (historical society/working group) – *Are there any plans for 'historic installations' at the reservation? Has there been any consideration of using the high services museum to point people to the reservoir?*

Marion – Regarding interpretive panels, thinks it is an intriguing idea of working with museum or with the gatehouse – feels plenty of information and will include something about interpretation the recommendations.

20. Chris Hayden – *Is crossing Beacon St going to be addressed? He's seen plans of the waterworks office that he hasn't seen presented yet – are they involved? Is use of the reservoir for sailing and/or a boathouse an option?*

Marion – would need to work with cities on that because it is a city street. Plan will likely identify crossing points to recommend to another agency (BRA, cities) and there may be an opportunity to have improved crossing areas come into part of the allocation of the BRA mitigation funds.

Leslie – Yes, the developers of the Waterworks are involved – Merrill Diamond is a member of the working group.

Leslie – Use of the water has been discussed at the working group meetings and will be explored.

21. Jerry Collins – *Wanted to know about the pathway leading from the Comm. Ave apartments into the Reservation – it looks overgrown.*

Marion – Believes it is a right of way – the intent is currently unknown.

Wendy – management decisions will be made based upon information available and potential uses.

22. *A tree behind the Comm. Ave apartment buildings) came down in a storm in 2000 and has been there ever since. Understands that the fencing is required to maintain water quality – perhaps the section along Chestnut Hill Dr is the section is the portion that is maintained? The question regarding funding keeps coming up - does this effect Kevin's time at the reservation and the budget for his management?*

Kevin – He manages 12 separate facilities and he divides his time as needed. Leslie – a staffing time analysis will be prepared as part of the recommendations.

23. Eva Webster – *Thanks DCR for their work done to date – felt that the criticisms posed early in the meeting were unwarranted. With regards to the fencing, she has a 19th lithograph that shows fencing (wood rail) not all the way around but only in key areas – proposed the fence needs to be discussed in depth, possibly time devoted expressly to the issue of the fence by the working group. With regards to the proposed WWII monument, stated that land here has been shrinking and feels that this is not a place for a war monument. With regards to boating, this is an active us and we need to make careful decision to consider all impacts upon wildlife; also a dock would involve BLC approval so it is not an easy task. With tree management, will the plan be looking at removal and additions? There are no trash cans in an area by the rink – DCR needs to keep them there to stem the tide of trash.*

Marion – yes, tree health will be considered heritage trees considered, and they will be looked at with regards to vistas and recreational uses of the reservation.

24. Representative Michael Moran - Two types of questions have arisen – Master Plan questions and Operational questions; DCR is underfunded; His office is open, he is ready to help

WRAP UP/CONCLUSION BY WENDY PEARL

At the completion of the discussion period, Mrs. Pearl presented a recap of the schedule. The next Working Group and Public Meetings will be held in early February following the completion of the Draft RMP. She also noted that the Boston Redevelopment Authority will be holding a meeting of the Chestnut Hill Waterworks Impact Advisory Group to discuss mitigation benefits related to the Chestnut Hill Waterworks project. The meeting will be held December 7, 2005, 6:30 pm at the Brighton Marine Health Center. Members of the public are welcome to attend.

Chestnut Hill Reservation Resource Management Plan Working Group

Local Groups

Aberdeen & Reservoir Civic Association
Larry Loew, President

Aberdeen Brighton Residents Association
Malcolm Johnson

Allston Brighton Comm. Dev. Corp.
Charlie Vasiliades, Board member

Allston-Brighton Youth Hockey
Michael Cashman

Boston College Task Force
Joseph Teller

Brighton-Allston Historical Society
William Marchione

Brighton-Allston Improvement Association
Arturo Vasquez, President

Brighton Garden & Horticultural Society
Wilma Wetterstrom, Vice President

Brookline Civic Association
Paul Saner

Chestnut Hill Association
Ruthanne Fuller, President

Chestnut Hill Garden Club
Carol Post Pfaelzer

Chestnut Hill Neighborhood Association (Brookline) *Jean Fulkerson*

Chestnut Hill Reservoir Coalition
Eva Webster, President

Chestnut Hill Reservoir Community Gardens
Beverly Ross, Coordinator

Chestnut Hill Waterworks Community Task Force
Stan Kugell, Steering Committee Member

Corey Hill Neighborhood Association
Isabella Hinds

Fisher Hill Association
Gill Fishman, Co-President

Friends of the Houghton Garden
Michele Hanss

Friends of the Waterworks, Inc.
Elaine Pierce

Lake, Undine, Calta and Kenrick Street Assoc.
Mark Alford

Reservoir Gardens Condominium Association
Gerald Collins

Salisbury Rd – Corey Farm Neighborhood Assoc.
Ted Nolte

Elected Officials

Office of Senator Cynthia Stone Creem
Josh Krintzman, Legislative Director

Office of Representative Frank Smizik
George Chapman, Legislative Aide

Office of Representative Michael J. Moran
Jay Cincotti

Office of Representative Kevin G. Honan

Office of Senator Steven A. Tolman
William D. Luzier, General Counsel

Office of Jerry McDermott
Boston City Council
Kristin Langone, Policy Advisor

Town of Brookline
Roger Blood

Public Agencies

Department of Conservation & Recreation
Wendy Pearl, Project Manager

Department of Conservation & Recreation
Kevin Hollenbeck, Supervisor
Chestnut Hill Reservation

Department of Conservation & Recreation
Leslie Luchonok, Director
Resource Management Planning Program

Division of Capital Asset Management
Melissa Robin, Project Director
Office of Real Property

Executive Office of Environmental Affairs
Betsy Shure Gross, Executive Director
Office of Public Private Partnerships

Massachusetts Historical Commission
Brona Simon, Deputy State Historic Preservation Officer

Massachusetts Water Resources Authority
Marianne Connolly, Program Manager

Boston Conservation Commission
Chris Busch, Acting Executive Secretary

Boston Parks and Recreation Department
Brian McLaughlin, Executive Secretary

Boston Redevelopment Authority
Joe Lawler

Boston Redevelopment Authority
Jill Ochs Zick, Landscape Architect

Mayor's Office of Neighborhood Services
Paul Holloway, Allston / Brighton Neighborhood
Coordinator

Non - Profits

Boston College
Thomas J. Keady, Jr., Vice President

Boston GreenSpace Alliance
Peter Bowne, Executive Director

Local Businesses

Brighton Main Streets
Rosie Hanlon, Executive Director

Cleveland Circle Association LP
Bob Marks, Founder

Diamond|Sinacori
Merrill H. Diamond, Principal

Appendix C

ANNOTATED CHRONOLOGY AND STATEMENT OF SIGNIFICANCE

The first part of this appendix describes the main events in the history of Chestnut Hill Reservoir in chronological order, and includes key images that show important developments or illustrate conditions on the ground. The second section reviews the documentation relating to the current historic status of Chestnut Hill Reservation, and proposes potential new areas of landscape significance that have emerged as a result of the research conducted for this RMP.

Annotated Chronology

The following chronology is divided into four sections:

1. Events prior to the creation of Chestnut Hill Reservoir (pre-1865);
2. The construction of the complex (1865 – 1901);
3. Operation and maintenance (1902 – 1925);
4. Gradual obsolescence as a reservoir (1926 onwards).

Events prior to the creation of Chestnut Hill Reservoir (pre-1865)

- | | |
|------|---|
| 1630 | <ul style="list-style-type: none">• The Massachusetts Bay Colony, abandoning Charlestown to seek new sources of fresh water, settled on the Shawmut peninsula. For many years, water for the new town of Boston was derived from underground wells and cisterns. |
| 1652 | <ul style="list-style-type: none">• The private Water Works Company made a brief, unsuccessful attempt to create a water supply for Boston, by providing spring water for residents to collect in buckets from a small reservoir near the current site of Faneuil Hall. |
| 1796 | <ul style="list-style-type: none">• The Aqueduct Corporation, a private company, tried for the first time to pipe water to Boston residents, from Jamaica Pond. By 1825 it was supplying about 1,500 houses, but it was never large enough to meet the needs of all of Boston. |
| 1807 | <ul style="list-style-type: none">• The Town of Brighton was incorporated by a legislative act. |
| 1825 | <ul style="list-style-type: none">• A City-appointed committee considered Boston's water supply needs and possible solutions. Various reports and investigations followed over the next twenty years, but there was no consensus about the best approach and so no action was taken. |
| 1843 | <ul style="list-style-type: none">• The Town of Brighton set out Chestnut Hill Avenue (originally called Rockland Street), thus starting to develop the area of marsh, meadow and woodland that was to become the site of the Chestnut Hill Reservoir. |
| 1846 | <ul style="list-style-type: none">• After many years of debate and political jousting, the Massachusetts state legislature approved a water plan for Boston, devised with help from John Jervis. He had just completed installation of New York City's water system, centered on the Croton reservoir, to great acclaim.¹ The 1846 Water Act allowed the City of |

¹ Fern L. Nesson, *Great Waters: A History of Boston's Water Supply* (Hanover, NH: University Press of New England, 1983).

Boston to take water from Long Pond (renamed Lake Cochituate) in Natick. Installed at a cost of \$4m, the system included a 14.5-mile brick aqueduct from the lake to a reservoir in Brookline, which crossed under the future site of Chestnut Hill Reservoir (see Figure 2.1). It was completed by 1848.

- 1848 • The Selectmen of Brighton purchased a 14-acre “beautiful, well-wooded tract” of Aspinwall woods (immediately adjacent to the land that was to become the Chestnut Hill Reservoir), to create the Evergreen Cemetery. About another 6 acres was added to the cemetery lot, to its west and south, after 1897.²
- 1850 • Designed by Cambridge civil engineer William A. Mason, the Evergreen Cemetery was dedicated.
• Beacon Street was set out, crossing the future site of the Chestnut Hill Reservoir (see Figure 2.2). It was a fifty-foot wide county road.
- 1859 • A major break in the aqueduct left Boston for a period with only the water in its four small reservoirs, and the Water Board recommended the construction of a much larger storage capacity just outside of Boston.³
- 1861 • The Civil War began, introducing some delay into the plans for the new reservoir.
- 1863 • The Water Board decided that the new reservoir should be located in Newton, Brookline or Brighton, to supplement the storage already available at Brookline. Two sites were considered, but the Board unanimously chose one of about 100 acres on the Brighton / Newton borders.⁴
• Boston College was founded to provide a Jesuit university education for the sons of Irish Catholic immigrants, who were becoming a large part of Boston’s population. Originally located in the City’s South End, it moved to Chestnut Hill in 1913 and was to play a major role in the redevelopment of part of the Reservoir.⁵

The construction of the complex (1865 – 1901):

- 1865 • The Civil War ended.
• The state legislature approved the Water Board’s plan to add new water storage capacity, which the Board voted to call the Chestnut Hill Reservoir. Before construction started, the Board twice decided to increase the size of the chosen plot, adding a piece of land south of Beacon Street and another to the west, which was known as the Lawrence Meadow.⁶ In nineteen separate transactions, the City bought more than two hundred acres of land, at a total cost of about \$120,000. Purchase was complete by 1867.⁷ There were a number of reasons for choosing the site in Brighton (which had originally been recommended by City Engineer, N. Henry Crafts). It was situated between the source of supply (Lake Cochituate) and its distribution (the city), and its topography was ideal: like the Brookline Reservoir, it was a natural basin, and it was at the right elevation for natural gravity flow. It was in a largely undeveloped area that consisted of marshes and meadow, with significant amounts of ledge rock, and some wooded hills and rocky outcropping to the north and east.⁸

² Walker-Kluesing Design Group, Sara B. Chase, and Ocmulgee Associates, Inc., “A Preservation Master Plan for Boston’s Active Historic Cemeteries” (Prepared for the City of Boston, 1999), 47.

³ William P. Marchione, “A History of the Chestnut Hill Reservoir, Part 1: Building the Reservoir, 1866-70.”

⁴ Nathaniel J. Bradlee, *History of the introduction of pure water into the city of Boston* (Boston: Alfred Mudge & Sons, 1868), 201.

⁵ Office of the University Historian, “A Brief History of Boston College,” <http://www.bc.edu/offices/historian/resources/history/>, 2005.

⁶ Bradlee, *History*.

⁷ Boston Landmarks Commission, *Report on the Potential Designation of the Chestnut Hill Reservoir and Pumping Stations as a Landmark* (Boston, 1989), 35.

⁸ *Ibid*, 5.

- The construction of the sewer to drain the valley (described below) suggests that there was considerable moisture present in the chosen site, although earlier maps are not consistent in depicting whether or not there was any standing water or significant wetland present. Two John Hales' maps of Boston and its vicinity, produced in 1819 and 1833, show no significant water features on the site. An 1852 map, however, by Charles Perkins (at Figure 2.1), clearly indicates a brook running across the location of the new reservoir. A similar feature appears on the 1866 Wightman map of Brighton. More recently, a 2002 report recorded its author's "understanding that a wetland previously existed in the present location of Chestnut Hill Reservoir."⁹



Figure 2.1. An 1852 map of the Boston Water Works, by Charles Perkins, showing the route of the Cochituate Aqueduct and the brook running across the future site of the Chestnut Hill Reservoir (Harvard Map Collection).

- Only Beacon Street needed to be moved further south to make room for the development,¹⁰ a move that the County Commissioners duly sanctioned (see Figure 2.2).
 - Preparatory work on the site included cutting down trees and brush, conducting surveys and digging trenches.
- 1866
- Work began in earnest on the Reservoir, under the supervision of Superintendent Albert Stanwood and Resident Engineer Henry M. Wightman. Wightman produced a Plan of the Town of Brighton showing the Reservoir "now being built by the City of Boston." A copy is available in the Harvard Map Collection. Housing for over 400 laborers (mainly Irish immigrants and Civil War veterans) and stabling for scores of horses and oxen were built on the site.¹¹ Construction work included building a 2000-foot embankment facing the relocated Beacon Street, to enclose the reservoir. It was 35-feet high, 25-feet wide and 150-feet at the widest point of its base. The workers also installed a vast brick sewer to drain the meadow (almost

⁹ Camp, Dresser, McKee, *Emergency Distribution Reservoir Water Management Study, Task 5.2: Chestnut Hill Reservoir Final Management Plan* (2002).

¹⁰ Boston Landmarks Commission. The report states that no other structures existed on the site, citing John Hales' 1830 map of Boston. The 1898 Commonwealth of Massachusetts, Metropolitan Water Works, Chestnut Hill Reservoir Land map at Figure 2.2 (compiled retrospectively to show the areas taken by the City and subsequently by the State) also shows no other buildings or structures.

¹¹ Boston Landmarks Commission, 36.

8,000-feet long and, for much of its length, 15 to 20 feet below ground).¹² It diverted away most of the natural watershed of the valley, leaving just a narrow strip around the edge that drained into the reservoir.¹³

- A pleasure drive or carriageway around the reservoir was proposed, an idea that won immediate, enthusiastic public support.¹⁴
- The reservoir could not be located directly over the Cochituate Aqueduct, which ran under the site, and so, after much deliberation, the Board settled on a plan with two irregularly-shaped basins, divided by a water-tight earth and stone dam that ran above the aqueduct (see Figure 2.3). Excavations revealed that the aqueduct had been installed on clay, which had settled, and so its brickwork was badly cracked. New masonry was installed that secured the aqueduct on bedrock.¹⁵ The two new reservoir basins had a stone lining of dry rubble masonry 2½ feet thick, which extended down a 19½ feet slope to a berm with riprap reinforcement.¹⁶ This lining was capped with granite blocks that ended just below the top of the reservoir (as can be seen in Figure 2.17).
- The Town of Brighton erected the granite Civil War Soldier's Monument, designed by George F. Meacham, in the Evergreen cemetery. It was placed to allow views of the new reservoir.¹⁷

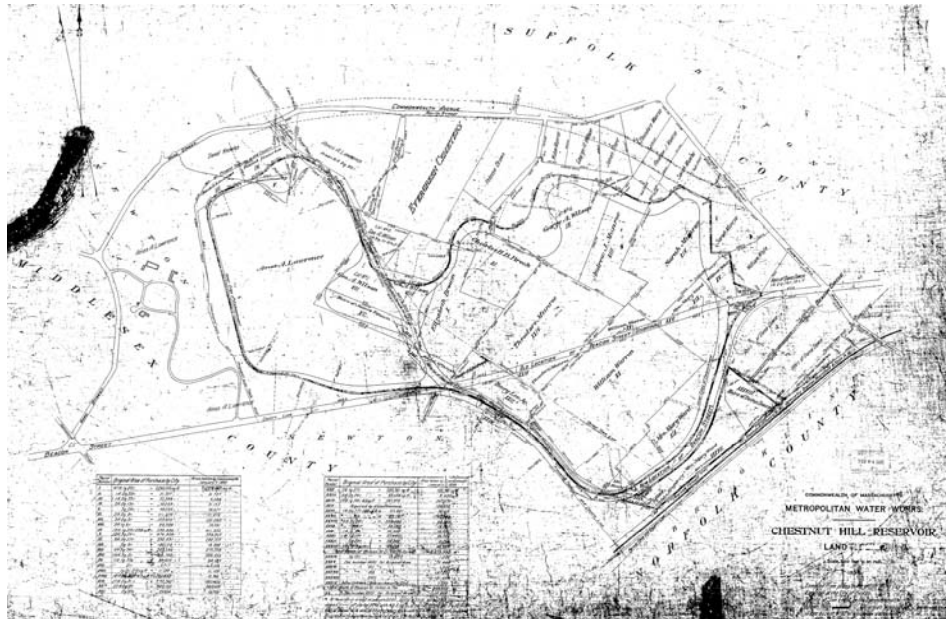


Figure 2.2. Commonwealth of Massachusetts, Metropolitan Water Works, Chestnut Hill Reservoir Land 1898 map, showing the previous ownership of the land and the original route of Beacon Street (Source: Massachusetts DCR).

- 1868
- The smaller basin was 37.5 acres in size and named after Amos A. Lawrence, who was the first president of the Water Board, and the former owner of much of the site. More than 240,000 cubic yards of material had been removed from the site to create the basin. Water celebrations marked its completion in October 1868. The second basin was larger, at 87.5 acres, and named for Nathaniel J. Bradlee, then Water Board

¹² Marchione, "History, Part 1."

¹³ CDM, *Study*.

¹⁴ Marchione, "History, Part 1."

¹⁵ Desmond FitzGerald, *History of the Boston Water Works, 1868 – 1876* (Boston: Rockwell and Churchill, 1876), 168.

¹⁶ Boston Landmarks Commission, 6.

¹⁷ Walker-Kluesing, "Master Plan."

president. It was completed in 1870, with water celebrations in that October.¹⁸ Between them, the basins could hold 731m gallons of water, enough to supply Boston with water for forty days.

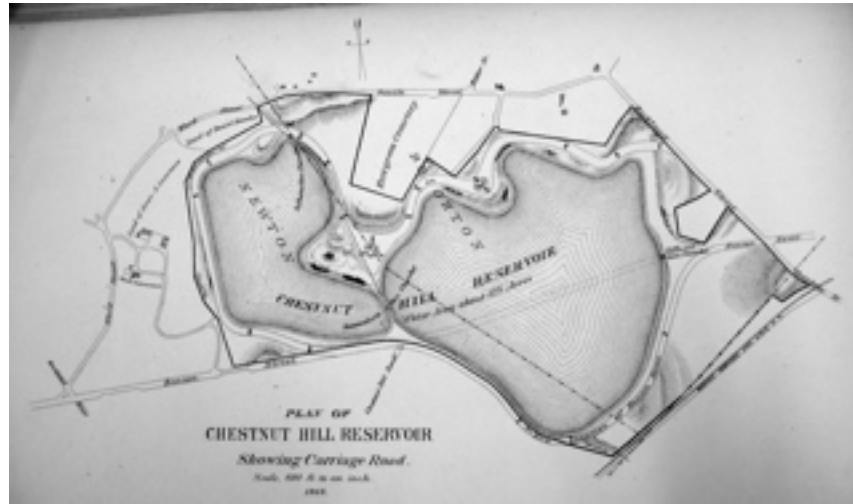


Figure 2.3. The 1868 plan of the new reservoir (Nathaniel J. Bradlee, *History of the introduction of pure water into the city of Boston*, Boston: Alfred Mudge & Sons, 1868).

- 1868–70
- The City built three structures at the Reservoir, designed by Edward R. Brown, an architect in the City Engineer's Office. These included an Influent Gatehouse (razed by Boston College in about 1951), which lay south of Commonwealth Avenue, opposite Lake Street, and which was designed to regulate the flow of water from Lake Cochituate.
 - The second was an Intermediate Gatehouse between the two basins on Chestnut Hill Driveway (on land now leased by Boston College), which was a hammered granite rectangular structure with a wood gable roof, arched openings and a bracketed cornice, designed to connect the two basins with the aqueduct.¹⁹
 - The third was the grand Effluent Gatehouse (now known as #1 to distinguish it from its 1898 replacement) located on the rim of the embankment at the end of the original route of Beacon Street.²⁰ Designed in the Italian Renaissance Revival style, this contained the major control gates for the reservoir. It was a two-level granite structure, three bays wide, with a shingled, hipped roof. Built on quicksand, it had substantial foundations with rubble piers and brick arches that rested on bedrock. On the first level were the entrance to the gate chamber and two flights of stairs leading to an elevated pathway, which in turn gave access to a central set of steps up to the second story and the level of the reservoir. A centered cupola was removed in 1909 and replaced with a brick chimney and wooden cornice.²¹

¹⁸ Sean Fisher, "Chronology of Boston/Metropolitan Water Works Facilities, 1840s – 1920s."

¹⁹ Jane Carolan and the Cultural Resources Group of Louis Berger & Associates, MHC inventory form for the Chestnut Hill Reservoir Area, 1984, continuation sheet, 1.

²⁰ Fisher, "Chronology."

²¹ Carolan, MHC inventory form for the Effluent Gatehouse #1, s8.

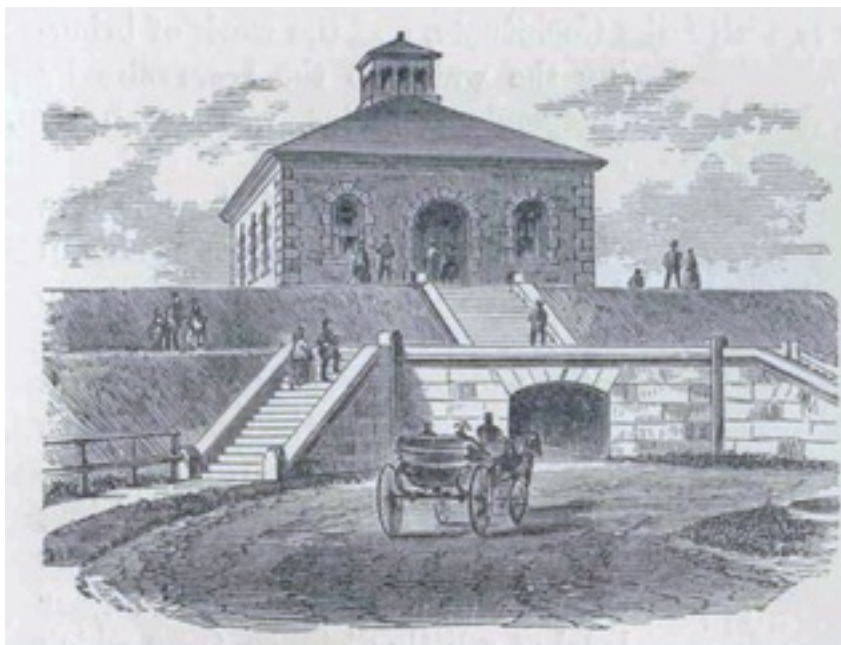


Figure 2.4. Effluent Gatehouse #1 (Edwin M. Bacon, *Boston Illustrated*, Boston and New York: Houghton, Mifflin and Company, 1886).

- An 1886 drawing (Figure 2.4) shows the Gatehouse from the Beacon Street side, with a wide circular driveway sweeping past the entrance to the gate chamber. There is a carriage on the road, and a dozen or more people on the steps and pathways. The image gives a good sense of the vast scale of the embankment built to enclose the Reservoir. The edge of a decorative fountain is just visible to the right of the drawing and a wooden post and rail fence to the left, at the bottom of the embankment.

- 1869
- The City of Boston appointed a committee to consider the possible location of public parks in the municipality. As with the drive to supply pure water for the City's inhabitants, this initiative was part of a wider movement of social reform that arose in the second half of the nineteenth century, as the industrial revolution was radically affecting people's working and living conditions. Reformers were seeking to introduce measures that would protect public health and improve public morals. A key part of this was the provision of easy access to naturalistic landscapes within the city, for outdoor recreation and family-oriented activity. Following the success of New York's Central Park (designed in 1858) there was public pressure to extend the idea to other cities, including Boston. The committee's work was reported with much interest by the local newspapers. The committee considered a number of ideas, including securing open space in surrounding towns before they were swallowed up by development. One proposal, put forward by local lawyer Uriel H. Crocker, was for a continuous linear parkway extending from the Charles River to the Chestnut Hill Reservoir. His plan utilized the Reservoir as it had "already become a favorite place of resort, and its natural and artificial beauties would certainly add greatly to the charms of any park of which it should become part."²² Critics who wanted large, stand-alone parks described the Crocker design as "straggling."²³ An 1869 map showing Crocker's proposals and the letter explaining them are available in the Harvard Map Collection at the Pusey Library.
- 1870
- On completion, the reservoir at Chestnut Hill was duly connected to the Cochituate system. It had been the largest public works project in the history of the city.

²² Letter, Uriel H. Crocker, headed "Plan for a Public Park," to the Committee of the City Government, Dec 20, 1869.

²³ Cynthia Zaitzevsky, *Frederick Law Olmsted and the Boston Park System* (Cambridge, MA: Harvard University Press, 1982).

- During the construction, as Crocker's proposals make clear, the Water Board also took steps to turn the site into the first large-scale rural park in Boston,²⁴ ahead of any decisions by the City about a municipal park system. The only other large public spaces available at this time were the Common and the Public Gardens, both in the center of town.²⁵ This aspect of the development was probably at the instigation of Nathaniel J. Bradlee, President of the Board, and a noted Boston architect. The landscape included an 80-foot wide carriage drive, topped with crushed gravel,²⁶ which wound its way around both basins (see Figure 2.3). Narrowing to 60 foot or so where necessary to preserve existing trees or outcrops, it followed the natural "rise and descent of the ground, and except when it passes through groves or around rocks, lies upon the margins of the reservoir or keeps the water in sight thus ... affording beautiful views for the whole distance."²⁷ Joined with the existing Beacon Street and Chestnut Hill Avenue, it offered a complete circuit around the two basins. There was also an 8-foot wide gravel footpath that circled the basins, with a six foot strip of grass on either side.²⁸ The Water Board planted many fine shade trees, vines and shrubs around the Driveway, as well as laying out areas as grassland. There was also a large pastoral park, with groves of trees and rocky outcrops, located to the east of the reservoir. The landscape became "a great pleasure resort" with its tree-covered hills and flowering shrubs, and the Driveway was the most popular one in the area.²⁹ The Driveway and its accompanying landscape cost the City over \$200,000. No original planting plans seem to have survived for the reservoir, but early photographs, postcards and descriptions (many reproduced below) give a good sense of the appearance of the landscape, if not full details of the particular plant species present.



Figure 2.5. The Entrance Arch on Chestnut Hill Avenue, c.1876 (Desmond FitzGerald, *History of the Boston Water Works, 1868 – 1876*, Boston: Rockwell and Churchill, 1876).

- At the high point of the new driveway, as it joined Chestnut Hill Avenue, the City built the triumphal

²⁴ Boston Landmarks Commission, 38.

²⁵ William P Marchione, "A History of the Chestnut Hill Reservoir, Part 2: Using the Reservoir."

²⁶ Boston Landmarks Commission, 39, says the surface was crushed gravel, although elsewhere, 6, the report refers to the "original granite paving blocks." FitzGerald, *History*, 171, calls the surface "macadamized."

²⁷ Bradlee, *History*, 223.

²⁸ Bradlee, *History*, 256.

²⁹ Boston Landmarks Commission, 38f.

³⁰ William P. Marchione, interview by author, email, Cambridge, MA, 4 Oct 2005. He pinpointed the location from examination of Plate 17 of the 1890 Bromley Street Atlas.

granite Entrance Arch, to commemorate the Water Works. It lay approximately 10 feet west of the current junction of Commonwealth Avenue and Chestnut Hill Avenue³⁰ (see Figure 2.7). Its inscription read “1870 City of Boston Chestnut Hill Reservoir.” The photograph at Figure 2.5 shows the entrance in about 1876. Ornate double gates (possibly made from heavy oak) are visible in each of its three stone archways, suggesting that the Driveway may have been closed at night. (These gates can be seen more clearly in an undated photograph held by the Bostonian Society.) It is also possible to see the stone wall on either side of the arch that separates the park from Chestnut Hill Avenue and, inside the park, a wooden post and rail fence running along both sides of the new Driveway.

- The 1870 Park Act, based on the results of the City-appointed committee, provided for a metropolitan commission to take lands and lay out parks in and around Boston. It was defeated, however in a vote by citizens, apparently from a fear that Boston would end up paying for parks to be enjoyed by residents of neighboring towns.

- 1870s
- In the Town of Brighton, trade was dominated by meatpacking and slaughter yard activities. “Cattle”, as one source has it, “was king.” Due to public health and safety concerns, the State ordered that all slaughtering activities within a six-mile radius of the State House be consolidated into one facility in Brighton, to be known as the Abattoir (1872).³¹
- 1872
- The Town of Brighton set out Englewood and Sutherland Streets adjacent to the new reservoir.
 - After a period of drought, water supplies ran low and the Water Board judged that the Chestnut Hill Reservoir was an inadequate solution to Boston’s water needs. The anxiety about the insufficiency of the water supply grew when a major fire destroyed much of downtown Boston. The Board implemented some temporary remedies over the summer and then applied to the legislature for permission to make permanent changes. The resulting Sudbury River Act allowed the City to take water from that river. Seven further reservoirs were constructed between 1872 and 1898, with the new Sudbury Aqueduct linking them to Chestnut Hill Reservoir.³²
 - The Water Board added a blacksmith’s and carpenter’s shop at the Reservoir,³³ on the land to the southeast of Beacon Street (on what became the pipe yard site).
- 1873
- A woodcut of the “Boston Suburbs” by J. Douglas Woodward (Figure 2.6) illustrated the newly-opened reservoir and drive as a popular destination, with carriages, pedestrians and people on horseback all enjoying the parkland. The image also clearly shows the low post and rail fence along the edge of the water that is just visible in Figure 2.5.
 - An economic recession delayed residential development of the area surrounding the new reservoir. Its attractiveness as a place to live was not helped “by the presence of two slaughterhouses with their offensive odors in the immediate neighborhood.”³⁴

³¹ William P Marchione, “When Cattle was King,” <http://www.bahistory.org/HistoryCattle.html>, 2005.

³² Nesson, *Great Waters*.

³³ FitzGerald, *History*.

³⁴ City of Boston, Aberdeen Study Committee, “Aberdeen Study Report,” http://www.cityofboston.gov/environment/pdfs/study_report.pdf, 2005.

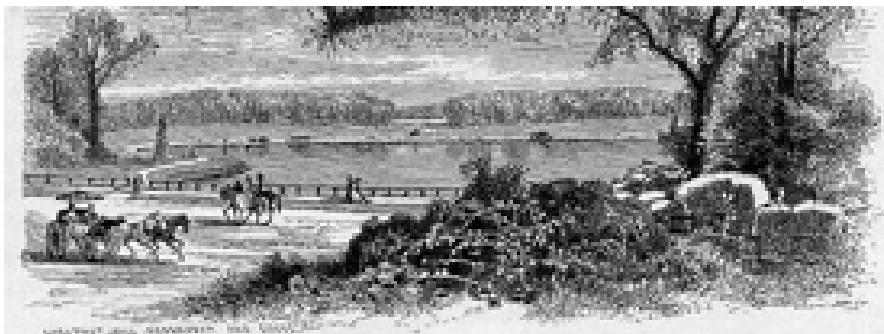


Figure 2.6. The Chestnut Hill Reservoir and Drive, part of a J. Douglas Woodward woodcut of the Boston Suburbs, 1873.

1874

- Brighton officially became a neighborhood of Boston.

1875

- The town boundary between Brighton and Newton (see map at Figure 2.7) was redrawn so that the Chestnut Hill Reservoir would be wholly within Boston. Newton gained about one hundred acres of prime real estate on Washington Hill in compensation for the lost land.³⁵ The map also shows the location of the Entrance Arch, at the intersection of the Driveway and Chestnut Hill Avenue, and the plot of land and buildings still privately owned by William White to the east, on the site of what is now the Reilly Memorial Rink and Pool.

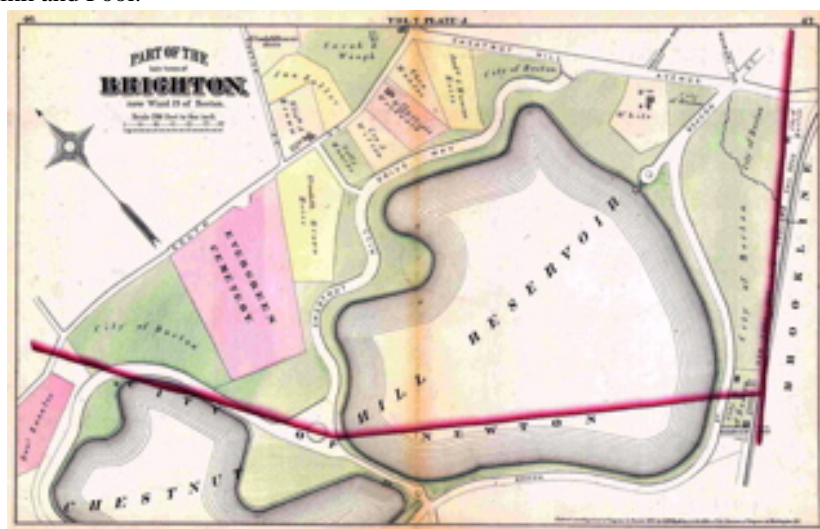


Figure 2.7. The 1875 ward map of part of Brighton, showing how the town line originally ran through the reservoirs (Brighton Allston Historical Society).

1875

- The Cochituate and Mystic Water Boards merged to form the Boston Water Board.
- The 1875 Park Act, approved by Boston voters, created a municipal commission, to consider a park system for the city. The new commission took views from the public, and informally consulted Frederick Law Olmsted.

1876

- The City planted English Elms (known as the Centennial Elms) around the reservoir, along Beacon Street and the Chestnut Hill Driveway. An undated photograph of Beacon Street at Figure 2.8 shows the maturing elms regularly and closely spaced along the roadway. Other images are available from the Massachusetts State Archives and the Brighton Allston Historical Society that further illustrate the placement of the trees.

³⁵ "Important Allston Brighton Dates," <http://www.bahistory.org/bahdates.html>, 2005.



Figure 2.8. An undated photograph taken from the reservoir embankment, showing the maturing centennial elms planted along Beacon Street (Brighton Allston Historical Society).

- The Boston Park Commission issued its first report, proposing a connected park system with, as outer parks, Jamaica Pond and a new 160-acre park in Brighton immediately adjacent to Chestnut Hill Reservoir (see Figure 2.9). The proposed new park would be bounded by Englewood Street to the south and Chestnut Hill Avenue to the north, and would be laid out with naturalistic clumps of trees, brooks, hills and open grassland. Around the reservoir, two further parcels of land would be taken to become parkland: the $16\frac{3}{4}$ -acres between South Street and the Driveway, and the $2\frac{3}{4}$ -acre, five-sided lot to the east, owned by William White. The Park Commission report also recommended a parkway joining the new Brighton park with the Charles River Embankment (as Uriel Crocker had proposed), but it did not suggest a route, as the parkway would have to pass through Brookline, not a part of the City of Boston.

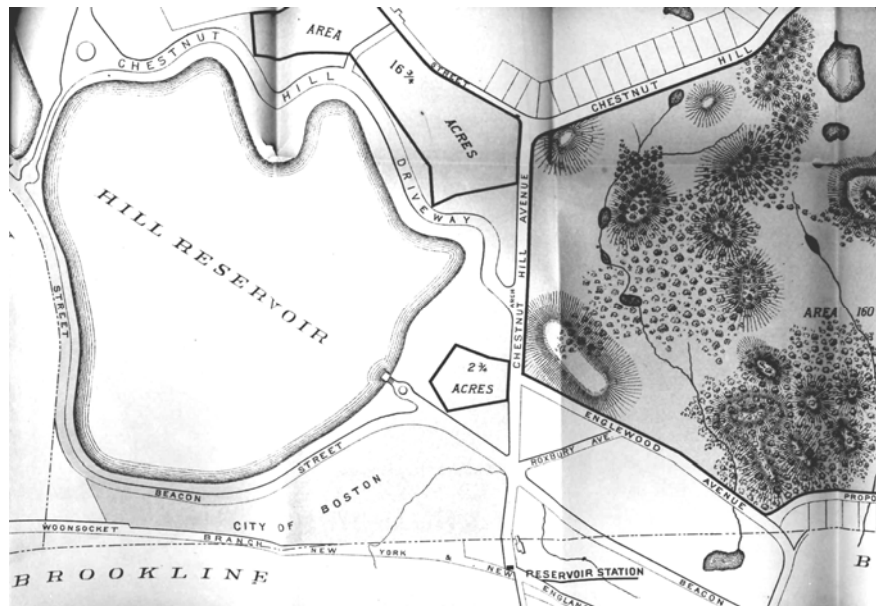


Figure 2.9. The 1876 proposals (detail) for parkland around Chestnut Hill Reservoir (Boston Park Commission).

- The City failed to implement much of the report (including the Brighton Park and Parkway) as it was short of funds following the 1872 fire and 1873 recession.
- 1878
- Completion of the work from the 1872 Act meant the mainstream of the Sudbury River was diverted via the Sudbury Aqueduct to the Chestnut Hill Reservoir. The Sudbury terminal chamber was designed by George Clough as the terminus of the new aqueduct system. Located on Beacon Street across the Newton town line, it was constructed of smooth and rockfaced granite ashlar, with a row of five arched windows and five stone disks to symbolize the five aqueduct gates within. Its design was probably influenced by the work of Philadelphia architect Frank Furness.³⁶
 - After an abortive competition, the City commissioned Frederick Law Olmsted to design a new park on the Back Bay. Over the next eighteen years he designed and constructed the ‘green ribbon’ of parks around the city that has become known as the Emerald Necklace.
 - The City built a stone stable at Chestnut Hill, on the land southeast of Beacon Street, probably designed by George A. Clough, City Architect. It was partially converted to a machine shop in 1921, and the carpenter’s and blacksmith’s shops moved there in 1924.³⁷
- 1883
- Boston’s forty-six other parks totaled less than 130 acres in size. Chestnut Hill, at 212½ acres, comprised 62 percent of the city’s parkland.³⁸
- 1884
- The City began work on the fourth and final stage of Commonwealth Avenue (originally called Massachusetts Avenue). This linked Brighton Avenue with the Chestnut Hill Reservoir. A plan at the Olmsted National Historic Site shows that Olmsted designed the road in two stages: the first part was a formal, wide boulevard with three parallel drives; the second half, leading to the reservoir, was a single roadway winding its way through the hilly terrain. This second part was never built as designed.
- 1885
- The success of Chestnut Hill inspired the Cambridge Water Board to attempt a similar recreational landscape and driveway around its storage facility at Fresh Pond. The Cambridge Board hoped that Fresh Pond would become to Cambridge “what Chestnut Hill Reservoir is to the City of Boston.”³⁹
- 1886
- The City began work on the High Service Pumping Station at Chestnut Hill, on the land southeast of Beacon Street. Housing massive pumps, its purpose was to lift water from the reservoir to recently annexed parts of Boston (Dorchester, Charlestown, Brighton and West Roxbury) that were too high to be supplied by gravity. Water was pumped to the new Fisher Hill Reservoir in Brookline. The building, constructed from Milford granite with Long Meadow freestone trim, was “an exuberant and skillfully rendered example”⁴⁰ of the Richardson Romanesque style by Arthur H. Vinal, City Architect (see Figure 2.14). It was completed in 1887. A rail siding at the rear of the building brought coal directly to the site, to power the engines. (The old railroad has become the MBTA Green Line.)
 - A book published on the City of Boston reported on the delights of the Reservoir: “The Chestnut Hill Reservoir is a great pleasure resort. A beautiful drive-way, varying from sixty to eighty feet in width, surrounds the entire work. In some parts the road runs along close to the embankment, separated from it only by the beautiful graveled walk with the sodding on either side. Elsewhere it leaves the embankment and rises to a higher level at a little distance, from which an uninterrupted view of the entire reservoir can be had. The scenery in the neighborhood is so varied that it would have itself made this region a delightful one for pleasure driving, without the added attractions of the charming sheet of water, the graceful

³⁶ Boston Landmarks Commission, 7.

³⁷ Fisher, “Chronology.”

³⁸ Marchione, “History, Part 2.”

³⁹ City of Cambridge Water Board, *Annual Report 1885*, p8.

⁴⁰ Candace Jenkins, ed., “National Register of Historic Places nomination form for the Water Supply of Metropolitan Boston,” 1989, s7, 6.

curvatures of the road, and the neat, trim appearance of the greensward that lines it throughout its entire length.”⁴¹



Figure 2.10. The drive around the Bradlee Basin (Edwin M. Bacon, *Boston Illustrated*, Boston and New York: Houghton, Mifflin and Company, 1886).

- The book also included four illustrations of the Chestnut Hill Reservoir, all probably drawn in the 1870s: featuring the Entrance Arch, the Effluent Gatehouse #1 (reproduced here at Figure 2.4), the drive around the small reservoir, and a view of the Bradlee basin (Figure 2.10). This last drawing shows the new Driveway to the north of the reservoir, at a point immediately east of the Evergreen cemetery. The road is filled with people on horseback and in carriages. On the right of the Driveway, and a step up, is a sidewalk or path, also well-populated with visitors on foot. A wooden post and rail fence, maybe three foot high, runs along the edge of the path, separating it from a grassy bank that slopes fairly steeply down to the footpath around the edge of the basin. More people are walking on this path. A similar post and rail fence can also be seen on the other side of the Driveway. In the distance, there is a very large tree (clearly pre-dating the construction of the reservoir) to the left of the road. To the right is a hilly promontory (which lies just south of Foster Street) that is densely covered with a range of mature trees; again their size suggesting that many of them pre-date the reservoir. Over the water in the far distance, the grand Entrance Arch and Effluent Gatehouse #1 are just visible.
- Henry Whitney, a local businessman and park commissioner, asked Frederick Law Olmsted to redesign Beacon Street in Brookline as a 200-foot wide European-style boulevard. Unusually for Olmsted, he included plans for commercial vehicles as well as pleasure traffic. The Town approved an amended version of the plan, with the road 160-foot wide. Provision for electric railway cars was also added. Olmsted correctly predicted that the new street would become an elegant residential neighborhood.

1887

- With the construction of Commonwealth Avenue and the new plans for Beacon Street in Brookline, Olmsted saw this loop of roads leading to the pleasure grounds at the Chestnut Hill Reservoir as a part of the municipal park system he was creating for Boston. Both roads ran through communities that had been sparsely populated but, with the arrival of the new roads, would rapidly become intensively developed.⁴²
- A painting by John Hyde (in the Clark Art Institute) shows the Entrance Arch and the ‘popular drives’ at the Reservoir.

⁴¹ Edwin M. Bacon, *Boston Illustrated* (Boston and New York: Houghton, Mifflin and Company, 1886).

⁴² Zaitzevsky, *Olmsted*.

- Another row of elms was planted by the City on the north side of Beacon Street in Brighton.
 - The Water Board built an attendant's house at the Reservoir, location now unknown.⁴³
- 1889
- The Water Board built a Biological Laboratory at Chestnut Hill, original location now unknown, designed by the Boston City Architect Department. Within nine years the function had moved elsewhere in the city⁴⁴ and the building was moved to what became the pipe yard site southeast of Beacon Street.
 - Streetcars were introduced on Beacon Street, making the reservoir grounds more accessible to those of limited means.⁴⁵
- 1890
- The Town of Brighton laid out a meandering series of roads in the area around the Reservoir, in contrast with the earlier straight roads such as Chestnut Hill Avenue and Beacon Street.
 - Local newspaper the *Brighton Item* described the idyllic neighborhood that awaited prospective Aberdeen homeowners, adjacent to the Reservoir. "Several hundred feet above any considerable portion of land in the neighborhood, commanding magnificent views in every direction, well watered, a perfect combination of woodland, and glade, and admitting the free exercise of the artistic taste of the landscape gardener, these lands are sure to be sought for residential purposes by the most desirable buyers."⁴⁶
 - The Water Board built a Carriage House out of Roxbury puddingstone (between the pumping station and the stone stable), which later became a garage. It was a one-story building, three window bays across.
- 1891
- The Trustees of Reservations was created by the Massachusetts legislature, at the instigation of landscape architect Charles Eliot. It was part of the growing interest in the importance of preserving landscapes and finding ways of allowing public access to them.



Figure 2.11. The eastern section of Bradlee basin, 1891 (Historic New England).

- A black & white photograph (probably taken from an elevated vantage point in the High Service Pumping Station) shows the whole eastern section of the Bradlee Basin (Figure 2.11). In the foreground is the wide gravel driveway that formed Beacon Street, with what appear to be footpaths on either side, separated by a narrow strip of grass from the road. The centennial elms look full-canopied and well grown to the right of

⁴³ Fisher, "Chronology."

⁴⁴ Ibid.

⁴⁵ Marchione, "History, Part 2."

⁴⁶ *Brighton Item*, August 9, 1890, quoted in William P. Marchione, "Brighton's Unique Aberdeen Neighborhood," <http://www.bahistory.org/HistoryAberdeenBill.html>, 2005.

the picture, while the elms planted in 1887 on the north side of Beacon Street are still small but appear healthy. The embankment encircling the eastern and southern edge of the Bradlee Basin is neatly turfed around the eight-foot wide gravel path that runs along its top. Groups of people can be seen walking along the path and on Beacon Street. A short path runs perpendicular to Beacon Street, with a flight of steps joining it to the embankment path. This path continues (presumably down a second flight of steps on the far side of the embankment) to become a short pier in the reservoir. There is a small boat on the water adjacent to the pier. This is probably a water sampling or algae dosing boat used by the water supply staff, as public boating was almost certainly prohibited by regulation.⁴⁷ In the background of the photograph, to the right behind the elms, is the open field that became the Reservoir Playground (now Cassidy Field). Behind the Effluent Gatehouse #1 (displaying its original cupola) is a thickly wooded area with some more open grassland just visible to the right. The gravel footpath is still discernible as it follows the curves of the basin behind and beyond the gatehouse.

- Another photograph in the same series (Figure 2.12) shows the view looking east down Beacon Street from the elevated pathway over the gate chamber entrance at Effluent Gatehouse #1. There are protective railings at the edge of the pathway, not obvious in other images (see Figure 2.4 and Figure 2.22). The photograph gives an excellent view of the circular ornamental fountain directly in front of the gatehouse, as well as the established centennial elms along Beacon Street and the smaller 1887 plantings in the foreground to the right.

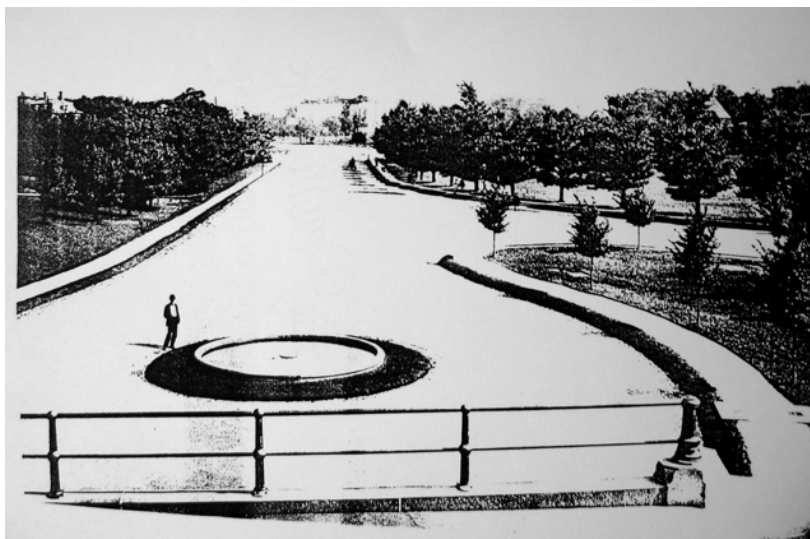


Figure 2.12. The view from Effluent Gatehouse #1, 1891 (Historic New England).

1893

- The state legislature created the Metropolitan Park Commission, to acquire and save open spaces in Greater Boston and make them accessible to the public (largely at the impetus of landscape architect Charles Eliot). The resulting Metropolitan Park System was the first regional system of open public space in the United States.⁴⁸ Chestnut Hill Reservoir was identified in the original Commission plans as open space ‘controlled by local authority.’⁴⁹
- The Massachusetts General Court requested a plan for the consolidated supply of water to the metropolitan area, based on the successful model of the Metropolitan Sewerage System, set up in 1886.

⁴⁷ Marianne Connolly, interview by author, email, Cambridge, MA, 19 Oct 2005 (quoting the MWRA’s Marcis Kempe as her source).

⁴⁸ Commonwealth of Massachusetts Green Ribbon Commission, *Enhancing the Future of the Metropolitan Park System* (Boston, 1996), 9.

⁴⁹ Charles W. Eliot, *Charles Eliot, Landscape Architect* (Boston: Houghton Mifflin, 1902).

- 1894
 - A state-of-the-art steam pumping engine, designed by Erasmus D. Leavitt, was installed in the High Service Pumping Station, to regulate the water level in the reservoir.⁵⁰

- 1895
 - Frederic P. Stearns produced a report on the consolidated supply of water for the metropolitan area, as requested by the General Court. He proposed a multi-municipality Metropolitan Water District and a new supply based on damming the Nashua River, to be linked to the existing Cochituate / Sudbury systems. Although controversial, his plans were agreed with amendments by the legislature and became the 1895 Metropolitan Water Act.⁵¹ (The legislation was modeled on the recent Metropolitan Park Commission Act.) The Act created the Metropolitan Water Board. As a result the Boston Water Board was abolished and replaced with the Boston Water Department.
 - Stearns believed that the technology of the water systems could co-exist with aesthetically appealing landscapes, and was responsible for bringing the Olmsted firm in to work on a number of Metropolitan District sites, including at Chestnut Hill.
 - The Metropolitan District's needs for high service pumping were split into two, with Chestnut Hill serving the southern region.

- 1896
 - The City dismantled the grand Entrance Arch on Chestnut Hill Avenue,⁵² to make way for an extension to Commonwealth Avenue. The extension was built along the north of the reservoir, replacing South Street. It then veered southeast, subsuming a small portion of the Chestnut Hill Driveway, before crossing Chestnut Hill Avenue, where it joined the existing section of Commonwealth Avenue that ran to the Charles River in Auburndale. (The new road can be seen in outline on Figure 2.2.)

- 1897
 - The ward map of Brighton shows three buildings on the plot still owned by William (W.D.) White to the east of the Reservoir.

- 1898
 - The City of Boston received \$14m from the State for its waterworks (including Chestnut Hill) as it joined the metropolitan system. Although the buildings and structures became part of the metropolitan system, much of the land at Chestnut Hill remained in the ownership of the City of Boston. Most of the parkland to the east, for instance, was not transferred to the state until 1959.
 - The High Service Pumping Station was extended to the west, to create another engine room, the addition designed by Boston architects, Wheelwright & Haven.
 - Work began on the Low Service Pumping Station, 500 feet to the northeast of the existing High Service Pumping Station, immediately adjacent to the stone stable. The site was a meadow that had been used as a dumping ground for spoil from the construction of the reservoir. The new station was designed to increase water pressure for the expanding downtown, with its increasingly high-rise buildings: it pumped water to a new distributing reservoir at Spot Pond, which was 29 feet higher than Chestnut Hill. Completed in 1901, the limestone-clad building was designed in the classical Beaux Arts style by Shepley, Rutan & Coolidge; successors to the H. H. Richardson architectural firm (see Figure 2.14). It housed three triple-expansion steam-pumping engines made by the Holly Manufacturing Company of Lockport, NY.⁵³
 - The Water Board began work on the Renaissance Revival-style Effluent Gatehouse #2 on the embankment across from the High Service Pumping Station (see Figure 2.13). It provided water to both pumping stations and took over the operations of the original c.1869 Effluent Gatehouse. One-story in height, it was three window bays across and one deep. High style features, as designed by architects Wheelwright & Haven, included the rusticated banding of the dressed granite ashlar, iron grille windows, and a low-

⁵⁰ Historic American Engineering Record (HAER) at The Library of Congress, Washington D.C.

⁵¹ Nesson, *Great Waters*.

⁵² Date from Fisher, "Chronology." In contrast, Boston Landmarks Commission, 32, says it was not dismantled until the early 1900s.

⁵³ Jenkins, "National Register nomination form."

pitched, copper-clad hip roof.⁵⁴ Built by John S. Jacob and Sons for \$10,000, it housed three hydraulic gates controlling three 60-inch mains.

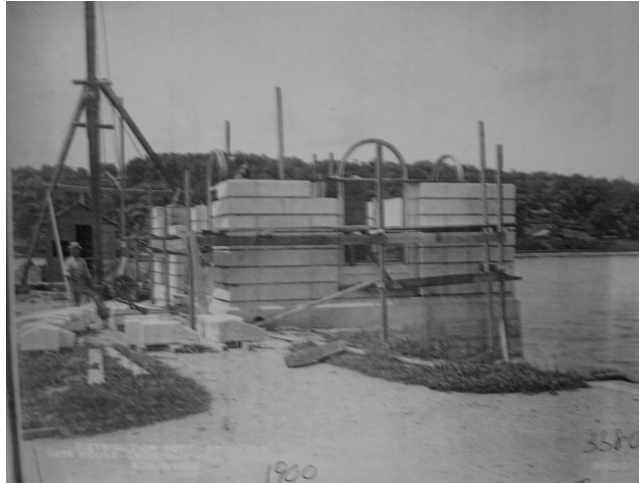


Figure 2.13. Effluent Gatehouse #2 under construction, 1900 (Massachusetts State Archives).

- The City of Boston built a playground on the land southeast of Beacon Street, adjacent to the Pumping Station complex. It was later named the Walter F. Cassidy Playground after a Second World War serviceman.
- 1899
- The Olmsted Brothers worked at Chestnut Hill. The landscape architecture firm produced a plan for a courtyard in front of the Low Service Pumping Station (then under construction).⁵⁵ The firm also designed the layout and grading plan for the proposed pipe yard site adjacent to the pumping station. It seems that they were also asked by the Water Board for advice on a Boston Park Commission proposal to relocate Beacon Street, but no changes were implemented.
- 1901
- The Metropolitan Water Board merged with the Board of Metropolitan Sewerage Commissioners to form the Metropolitan Water and Sewerage Board, within which there was the Water Works.
 - The Water Works added a Connection Chamber on the land southeast of Beacon Street that complemented the adjacent High Service Pumping Station in material and style. Built by the Norcross Brothers, it was made of quarry-faced Milford granite with brownstone trim, and topped by a hipped slate roof.⁵⁶ Its purpose was to take water from the Cochituate Aqueduct via a four-foot main to the High Service Pumping Station.
 - A photograph (at Figure 2.14) shows the just-completed waterworks buildings, looking southeast from Beacon Street. In the middle of the view is the extended High Service Pumping Station and, to the far left, the new Effluent Gatehouse #2. Between them in the distance is the recently constructed Low Service Pumping Station. To the left in the foreground is a wooden post and rail fence, more substantial and decorated than the one than ran along the northern part of the Driveway. It was clearly only a short run of fence: it does not appear in front of the High Service Pumping Station or further east along Beacon Street (see for example Figure 2.11), nor can it be seen along the dam further west (Figure 2.19).

⁵⁴ Boston Landmarks Commission, 9.

⁵⁵ Letter, Olmsted Brothers to Dexter Brackett (Water Works Distribution Department Engineer), April 28th 1900.

⁵⁶ Boston Landmarks Commission, 12.



Figure 2.14. A view of the waterworks buildings on Beacon Street, looking southeast, 1901 (Massachusetts State Archives).

Operation and maintenance (1902 – 1925):

- 1906
- Approved by the 1895 Act, the Clinton dam on the Nashua River created the Wachusett Reservoir. It was linked by an aqueduct to the Sudbury system and from there to Chestnut Hill. Costing \$21.6m, it was at the time the largest reservoir in the world.



Figure 2.15. The view southeast, showing the planting along the Bradlee Basin edge, 1907 (Brighton Allston Historical Society).

- 1907
- A color postcard (Figure 2.15) shows the view southeast over the Bradlee Basin, with the gravel path running alongside the reservoir, a swathe of neat grass separating it from the water. To the left is another flat area of grass leading to a sloping grass bank planted with thick, naturalistic clumps of what appear to

be birch trees. In the immediate foreground is the corner of a large rocky outcrop. Effluent Gatehouse #1 is in the background, with a wooded area behind it. (Figure 2.21 shows a more expansive view looking in the same direction).

- 1908
- The trustees of Boston College acquired thirty-three acres of private land adjacent to the Reservoir, as a new site for the College. It was the remains of the former Amos Lawrence farm, much of which had been acquired by the City in the 1860s to create the Lawrence Basin. The College moved to the new campus in 1913. The photograph at Figure 2.16 shows the position of the farm buildings and land, immediately west of the Lawrence Basin.



Figure 2.16. The Amos Lawrence farm to the west of Chestnut Hill Reservoir, n.d. (Newton Historical Society).⁵⁷

- A postcard image of Chestnut Hill Reservoir (Figure 2.17) shows the gravel-topped footpath on the water's edge, following the curved shape of the reservoir, with a neat strip of turf perhaps six feet wide between the water and the path, and a larger area of open grass between the path and a belt of shrubs and large trees. The granite blocks and dry stone lining the basin are also visible.



Figure 2.17. The path around the Reservoir, 1908 (Brookline Historical Society).

- Another postcard (Figure 2.18) shows the view looking northwards along Chestnut Hill Driveway as it

⁵⁷ The photograph seems to show, in the background, the construction of the Sudbury Terminal Chamber, which would date it at c.1878.

crosses the dam, with the Lawrence Basin to the left, the Intermediate Gatehouse, center, and the Bradlee basin to the right. There is a wide strip of grass planted with groups of evergreen and deciduous shrubs, which slope down from the Driveway to the gravel path around the Bradlee basin. Similar plantings appear either side of the Gatehouse, running immediately along the edge of the road. In the background to the right is the parkland that surrounds the Driveway north of the reservoir. It slopes gently up and away from the water to form a small hill, which is planted informally with largely evergreen trees and grass. Interestingly, like many of the postcards produced showing images of the Reservoir, this one describes it as being in (upscale) Brookline rather than the more working class community of Brighton.⁵⁸



Figure 2.18. A 1908 view along the dam looking north (Brighton Allston Historical Society).

- An undated but, from the plantings, clearly contemporaneous postcard (Figure 2.19) shows a similar view, from slightly further southwest. The curving gravel path between the Driveway and Gatehouse is visible, with shrub plantings on either side. A large deciduous tree marks the curve of the road towards the dam.



Figure 2.19. Another view of the Intermediate Gatehouse and the Driveway over the dam, n.d. (Brookline Historical Society).

- The City of Boston put some 2,300 feet of galvanized wire railing, 5 feet high, around the Evergreen cemetery, from the western edge of Commonwealth Avenue along the west, south and east boundaries. Replacing low wire fencing, it was installed by New England Anchor Fence.⁵⁹

⁵⁸ William P. Marchione, interview by author, email, Cambridge, MA, 12 September 2005.

⁵⁹ Walker-Kluesing, "Master Plan."

- 1909
- Electric streetcars were introduced on Olmsted's Commonwealth Avenue, which led to a major boom in apartment building in the area.
- 1910
- A postcard (Figure 2.20) shows the view looking south over the Bradlee Basin, probably from the Driveway just as it joined Commonwealth Avenue. In the foreground are some rocky outcrops, planted around with deciduous shrubs, columnar trees and grass. Below these runs the gravel path, with a strip of turf separating it from the water. To the left is a wooded area, rising away from the water, with what appear to be mainly conifers growing naturalistically in grass. There is a very large rocky outcrop just visible on the convex curve of the reservoir, separating the path from the woodland. The Effluent Gatehouse #1 and Low Service Pumping Station can be seen in the background.
 - An undated black & white postcard (Figure 2.21), also probably from around this time, shows the view in the opposite direction, looking along the eastern rim of the Bradlee Basin towards Commonwealth Avenue. In the foreground to the right is a close-up view of the large rocky outcrop, with deciduous trees and vines planted in front and above. The 8-foot gravel path curves away from the viewer and then around the back of the basin, bounded on both sides by trim grass. The dry stone lining the basin is visible along the far edge. Above this is a neatly grassed bank, sloping up, smooth on the right-hand side and interspersed with rocky outcrops to the left (from where the view in Figure 2.20 was taken). A selection of trees and shrubs has been planted on the bank, including a rather stiff array of young columnar trees (probably eastern red cedars) to the right. Just above the embankment (behind the cedars) lie the Chestnut Hill Driveway and the backs of residences, replaced in the 1920s, which then lined Commonwealth Avenue.



Figure 2.20. The view south over the Bradlee Basin, 1910 (Brookline Historical Society).



Figure 2.21. The view over Bradlee Basin looking north to Commonwealth Avenue, n.d. (Brighton Allston Historical Society).

1915

- A black & white postcard (Figure 2.22) shows the grand Driveway leading to Effluent Gatehouse #1, flanked on both sides by a formal row of elms planted in grass. The trees are large and full-canopied, perhaps 30 feet high. A footpath either side of the road is just visible. There are also several gas street lamps immediately adjacent to the road. The large circular basin for the fountain can be seen in the distance, in front of the Gatehouse.



Figure 2.22. A 1915 postcard of the approach to Effluent Gatehouse #1 (Brighton Allston Historical Society).

1916

- The parkland at Chestnut Hill was still well-maintained and aesthetically pleasing, according to a description published this year: “All around the winding outlines of the basin runs a trim driveway, and besides it a smooth gravel footpath. On all sides of the lake are symmetrical knolls, covered with forest trees and the greenest of turf. The banks to the waters edge are sodded and bordered with flowered shrubs; and the stonework, which in one place carries the road across a natural chasm, and the great natural ledges, are mantled over with clinging vines, and in autumn are aflame with the crimson of the ampelopsis and the Virginia creeper.”⁶⁰

⁶⁰ *A Guide Book to Boston* quoted in Boston Landmarks Commission, 39.



Figure 2.23. The Chestnut Hill Driveway after being resurfaced, 1916 (Massachusetts State Archives).

- A series of photographs in the State Archives (see one at Figure 2.23) shows the Driveway as it runs over the dam being resurfaced with ‘Tarvia Macadam’. The changing nature of the vehicles using the Driveway (which no doubt necessitated the new surface) is nicely illustrated: in the foreground is one of the recently-purchased Metropolitan Water Works automobiles; in the rear is a horse and carriage. The planting along the road appears dense and lush and the grass borders still trim.

1917

- The Metropolitan Water Board dug up much of the approach road leading to Effluent Gatehouse #1, to remove a 48-inch Venturi meter (a device that measures the speed of flow). The photograph at Figure 2.24 shows the extent of the work undertaken. Even though only one elm can be seen, at the rear to the left of the picture, later photographs show that the trees were preserved during this work (see for example Figure 2.25).



Figure 2.24. Removing the Venturi meter from Beacon Street, 1917 (Massachusetts State Archives).

1919

- The Metropolitan District Commission (MDC) was created by an Act of the legislature. It greatly expanded the responsibility of the park system’s managers, as it consolidated what had been three distinct regional agencies (the water and sewer boards, already merged in 1901, and the park commission) into one single organization. The MDC had responsibility for metropolitan watersheds, water supply and treatment

facilities; sewerage and sewage treatment plants; and parkways and parklands.⁶¹ The new organization thus assumed responsibility for Chestnut Hill Reservoir.

- The State Board of Health and the new Metropolitan District Commission began a joint review, to evaluate future water needs and plan for system expansions.

1920 • The Water Division of the MDC found many of the elms planted at Chestnut Hill to be in poor condition. Photographs from the MDC Archives show the trees being pruned.

1922 • The joint review begun in 1919 produced its recommendations. These included disconnecting the Sudbury/Cochituate system because its watershed was becoming polluted, and relying on the Wachusett system, which would be supplemented by new supplies from the Ware and Swift Rivers. The proposals (even though they had been foreshadowed in the 1895 report) were so controversial with both the legislature and the affected towns that a further review was instigated to find alternative solutions.

1923 • An aerial photograph (Figure 2.25) shows the northeastern part of the reservoir and the main thoroughfares of Commonwealth Avenue and Beacon Street. The photograph was taken in late November and so it is clear that much of the tree cover is evergreen, especially along the northern shore of the reservoir. Another photograph in the same series shows a good amount of evergreen material on the promontory south of Foster Street and on either side of the Driveway as it runs alongside the Evergreen cemetery. On Beacon Street the elms are still present, and the circular fountain can be seen in front of Effluent Gatehouse #1. The area to the east of the reservoir now appears to be all parkland, suggesting that the buildings owned by William White, which stood there until at least 1897, have been demolished. The Bromley Atlas of 1925 confirms that no buildings remained on this plot.



Figure 2.25. Aerial view looking northeast (detail), showing Commonwealth Avenue from the Chestnut Hill Reservoir, 1923 (Bostonian Society).

1924 • A large complex of apartment buildings known as “Reservoir Gardens” was built at 1982-1992 Commonwealth Avenue, immediately abutting the parkland to the north of Chestnut Hill Reservoir. These replaced the houses visible in Figure 2.25 and can just be seen in Figure 2.26.

1925 • The City of Boston replaced the 1908 wire railing around the Evergreen cemetery with new wire fence.⁶²

⁶¹ Green Ribbon Commission, 16.

⁶² Walker-Kluesing, “Master Plan.”

Gradual obsolescence (1926 onwards):

- 1926 • The second review instigated by the legislature, to evaluate future water needs and plan for system expansions, produced its proposals. These included filtration of polluted water from eastern Massachusetts rather than seeking new supplies further west. The recommendations were even more unpopular with towns than the original report, and the legislature decided to revert to the 1922 proposals. Consequently it passed the 1926 Ware River Supply Act and the 1927 Swift River Act.
- 1928 • To improve the quality of the water at Chestnut Hill Reservoir, the MDC enclosed the north side of the Bradlee Basin with about 4,500-feet of fence, a combination of decorative iron picket and chain link fence, intended to prevent human access and illegal dumping. It thus protected the narrow strip of watershed that drained into the reservoir. Three double-drive gates were also erected.⁶³
- 1929 • The MDC enclosed the south side of the Bradlee Basin with about 3,680-feet of decorative iron picket fence, to join with and match the existing fence installed the previous year. Two gates and a special fence around Effluent Gatehouse #2 were also commissioned.⁶⁴ Topped with acorn finials,⁶⁵ the fence closed off the original inner path to the public. A new outer path was created to continue to allow public access to the land. The work was carried out by Coughlan Construction Co. Inc. with landscape plans by Storch Associates.⁶⁶ One source sees this development as the beginning of a long spiral of neglect for the Reservoir as a public recreational space.⁶⁷
- 1930 • An aerial photograph (Figure 2.26) shows Beacon Street in the foreground with, laid out left to right, the various waterworks buildings (High Service Pumping Station, garage, stable, Low Service Pumping Station, and the pipe yard site with the carpenter's and blacksmith's shops, the former laboratory, and a long shed structure). It is clear that a number of the centennial elms along Beacon Street have died and been removed. Of the later elm plantings on the north side of the street, only a few near Effluent Gatehouse #1 appear to have survived.

⁶³ Commonwealth of Massachusetts, Metropolitan District Commission, Water Division, "Contract and Specifications for furnishing and erecting fence for Chestnut Hill reservoir, Boston", 1928.

⁶⁴ MDC, Contract, 1929.

⁶⁵ Boston Landmarks Commission, 6, describes them as pineapples, but the 1929 contract says they are acorns.

⁶⁶ Boston Landmarks Commission, 6.

⁶⁷ Marchione, "History, Part 2."



Figure 2.26. A 1930 aerial view of both basins, looking northwest (DCR Archives).

1931

- About 5,750-feet of decorative iron picket fence was installed by the Beacon Equipment Company at the Lawrence Basin at a cost of \$10,894.36, again to protect the water supply from pollution by people and dumping.⁶⁸



Figure 2.27. Two photographs from the early 1930s showing the new fence around the Lawrence Basin (University Archives, John J. Burns Library, Boston College).

- The photographs at Figure 2.27 show sections of the new fence, with its decorative finials, shortly after it was installed around the Lawrence Basin. The new outer path can also be seen in both photographs, separated from the fence by two feet or so of mown grass.
- The MDC staff magazine carried a paragraph about the new fence, which gives a sense of the reasons for its installation and the likely public reaction: “Plans for a fence around Lawrence Basin at Chestnut Hill Reservoir have been completed. This will conclude the enclosing of the entire reservoir within a fence. We regret that such a measure was deemed necessary as it detracts immensely from the natural beauty of this well known spot. If most people in general and some people in particular had been more careful in

⁶⁸ Commonwealth of Massachusetts, *Annual Report of the Metropolitan District Commission, 1931*, 32.

observing the rules and regulations regarding the preservation of the purity of this water, which serves Metropolitan Boston for drinking purposes, this drastic measure need never have been taken. If you hear folks protesting about the ‘meanness’ of the Board of Commissioners or the Chief Engineer of the Water Division just remind them that they have only themselves to blame not individually, perhaps, but collectively.”⁶⁹

- The Ware aqueduct, authorized by the 1926 Act, was completed.
- 1937
- The MDC reported that it was concerned about pollution at Chestnut Hill Reservoir, given the reservoir’s proximity to public roads and paths. It planned further construction that would end regular use of both Chestnut Hill and Spot Pond.⁷⁰
- 1938
- A hurricane destroyed some of the elms at Chestnut Hill.
- 1939
- The Swift River Reservoir was completed and named the Quabbin. Costing \$50.3m, it was so large it took seven years to fill. The water flowed from there to the Wachusett Reservoir and then to Boston. The new City Tunnel, which carried the water to Boston, was bored in part underneath the Chestnut Hill Reservoir, running west to east. The outbreak of the Second World War, and the subsequent risks of attack on the water system, delayed MDC plans to identify and dispose of the parts of the metropolitan system made surplus by Quabbin’s completion.
- 1944
- Landscape architect Arthur Shurcliff corresponded with the City and the Commonwealth about replacing the lost elm trees along Beacon Street and beside the Reservoir.
- 1945 on
- The pressures of population growth, greater automobile use and more leisure time meant that the MDC’s focus after the Second World War began to shift away from the preservation of public land and towards the construction of new roads and recreational facilities.⁷¹
 - Following the introduction of the Quabbin Reservoir and City Tunnel, the MDC began a major process to identify and dispose of surplus parts of the metropolitan water system. As the first disposition, the Mystic Reservoir was transferred to Tufts College for educational purposes.
- 1947
- A further four surplus reservoirs (including Lake Cochituate) became state parks.
- 1948
- The MDC declared the Lawrence Basin at Chestnut Hill (the smaller of the two) inactive.
- 1949
- The MDC voted to convey the surplus basin at Chestnut Hill to Boston College for educational purposes, with certain restrictions to ensure access for continued maintenance of the Cochituate Aqueduct.⁷² Although the MDC had originally considered selling the site for just one dollar,⁷³ Boston College still believed that the final cost of \$10,000 was a “bargain price.” The basin became the site for its 52.7-acre Lower Campus. The cost of filling in the basin was estimated at \$750,000. It happened gradually (see Figure 2.29): the last of the water did not disappear until 1969. Spoil from the construction of Route 128 and the City Tunnel was used to provide much of the fill. The Alumni athletics stadium was built by 1957, and over the next forty-five years, the College built a residential village for its undergraduate students on

⁶⁹ “The Office Window,” June 1931. The untitled paragraph is signed “M.P.C.”

⁷⁰ Commonwealth of Massachusetts, “Special Report of the Metropolitan District Water Supply Commission and the Department of Public Health relative to Improvements in Distribution and to Adequate Prevention of Pollution in Sources of Water Supply of the Metropolitan Water District,” December 1937.

⁷¹ Green Ribbon Commission, 18.

⁷² MDC Minutes, Feb. 10, 1949.

⁷³ MDC Minutes, Dec. 21, 1948.

the rest of the site.⁷⁴ The dam between the two reservoirs was destroyed during this time.

- 1951 • Boston College razed the 1868 Influent Gatehouse situated opposite Lake Street.
- 1954 • New oil-fired engines took over from the original steam ones in the High Service Pumping Station.
- 1959 • The Boston Board of Parks and Recreation Commissioners conveyed to the MDC part of the parkland at the eastern edge of the Chestnut Hill Reservoir (now assessor parcel number 2102473000), as shown on a plan held by the Department of Conservation and Recreation. This included the plot of land that used to be owned by William White and which became the site for the Reilly Memorial Rink and Pool.
- 1961 • The MDC constructed the Reilly Memorial Rink and Pool to the east of the Bradlee Basin, on land that used to be part of the pastoral park (see Figure 2.28). Pools and rinks were a major part of the MDC's recreational construction program as water pollution at that time made many beaches unappealing.⁷⁵

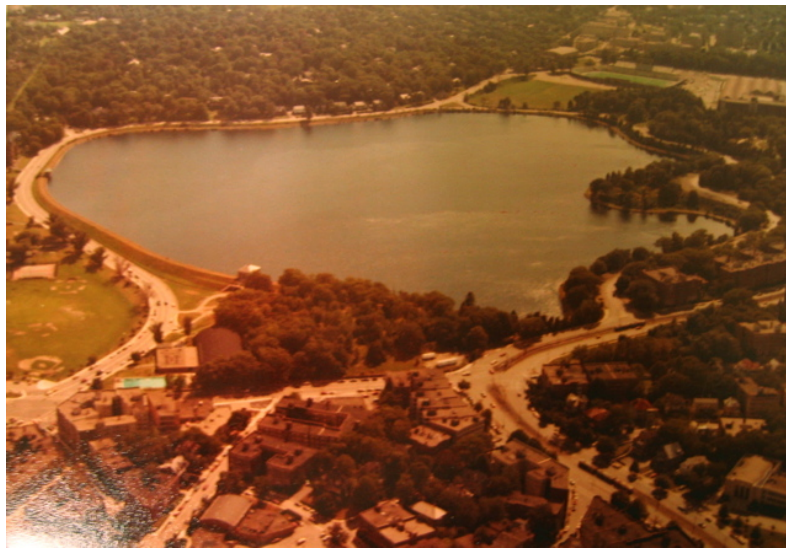


Figure 2.28. An aerial view of the Bradlee Basin, looking southwest, showing the location of the Reilly Memorial Rink and Pool bottom left, 1977 (DCR Archives).

- 1963 • An aerial photograph of Boston College (Figure 2.29) shows how the Lawrence Basin had been partially filled. The athletic grounds (Shea Field) are at the far right, with the triangular parcel of land known as Shaft 7 also partially visible.

⁷⁴“Overview:theNewLand,”*BostonCollegeMagazine*,summer2004,http://www.bc.edu/publications/bcm/summer_2004/ft_ove_rview.html, 2005.

⁷⁵ Green Ribbon Commission, 18.



Figure 2.29. Aerial view of the Boston College campus, looking northwest, 1963 (Boston College Archives).

- c1969
 - The 1878 stone stable was razed or possibly burned.
- 1970 on
 - The election of Francis Sargent as Governor of Massachusetts, combined with a growing environmental awareness and increasing citizen activism, led to the MDC's focus shifting back to the acquisition and stewardship of public open space.⁷⁶
- 1973
 - The American Society of Mechanical Engineers (ASME) designated the Leavitt engine in the High Service Pumping Station as a National Mechanical Engineering Landmark.
- 1976
 - About half an acre of land was transferred from the south end of the City of Boston's Evergreen Cemetery to the MDC, as the large number of ledge deposits made it unsuitable for burial use. Some time after this, the MDC installed a contemporary steel picket fence, four (4') feet high, on the south, and portions of the east and west, cemetery boundaries.⁷⁷
 - A May 13, 1976 agreement was made for the 17.55 acre parcel of land north of and including Chestnut Hill Driveway and the right of way of Saint Thomas More Road. This agreement leased the "care, custody and control, including police protection" of the park from the City of Boston to the MDC for a period of 99 years. (At that time, these 17.55 acres were known as "Chestnut Hill Park".) Copies of the agreement and survey of the land transfer are included in the appendices.
- 1977
 - The MDC spent \$1.5m carrying out extensive renovations and redevelopment at Chestnut Hill. Some \$300,000 was spent renovating the High Service Pumping Station and adjacent landscape. An extensive three-year program of landscaping was also carried out around the entire Bradlee basin, as documented in 88 construction drawings⁷⁸ and four books of photographs held by DCR. The work included the construction of new granite block pedestrian crossings; an overlook (see Figure 2.30) with a granite bench,

⁷⁶ Ibid., 22.

⁷⁷ Walker-Kluesing, "Master Plan."

⁷⁸ Storch Associates, "Plans for the Restoration and Rehabilitation of the Chestnut Hill Reservoir and Reservation," MDC contract number E77-40-PR&W, August 1977.

pavers and a large stone plaque that showed the distance to other metropolitan water supplies; and stone walls at each entrance on Chestnut Hill Driveway with plaques reading “Chestnut Hill Reservoir, Metropolitan District Commission Commonwealth of Massachusetts.”⁷⁹ The iron picket and metal chain link fence was restored in places and replaced in others, particularly along the northern section of the Driveway and along parts of Chestnut Hill Avenue.



Figure 2.30. The granite bench and overlook constructed as part of the late 1970s landscaping at Chestnut Hill, 1979 (DCR Archives).

- The 1977 plans also show an extensive program of replanting throughout the Reservation, including a significant number of Red Oak (*Quercus borealis*) on the south side of Beacon Street, along much of the Driveway, and on either side of Saint Thomas More Road. Sugar Maple, Horsechestnut and Flowering Dogwood were to join the oaks along the Driveway as it ran across the old dam, with clumps of Mountain Laurel, Shadblow Serviceberry and more Flowering Dogwood on the northern stretch. Along the northern side of Beacon Street the plans show extensive clumps of Showy Border Forsythia and ‘Dorothea’ Crabapple, while the parkland to the east was to be planted with Sugar Maple, Horsechestnut, White Pine, Silver Linden, River’s Purple Beech, and Mountain Laurel with wildflower mix. The approach road to Effluent Gatehouse #1 was also to be reworked significantly. It had lost its fine rows of elm and at some point been given a more curving layout (see Figure 2.31, which shows how the once-grand fountain area was being used as an informal grassy parking lot). The 1977 plans show that the old fountain and pool were to be removed and replaced by an island bed of ‘Thundercloud’ Plum. The fountain was subsequently installed in front of the Low Service Pumping Station. New curved planting beds were created adjacent to the Gatehouse steps and planted with Chinese Azalea and Inkberry.
- From an analysis of the 1977 photographs and the existing conditions survey completed for this report, it seems that, apart from the work in front of Gatehouse #1 and new landscaping at the intersection of Saint Thomas More Road and the Driveway, little of the proposed planting plans described above were ever implemented.

⁷⁹ Boston Landmarks Commission, 6.



Figure 2.31. The approach to Effluent Gatehouse #1 as the 1977 landscaping was about to start (DCR Archives).

- The Massachusetts Historical Commission voted the Chestnut Hill Reservoir and its associated pumping stations eligible for inclusion in the National Register of Historic Places.
- 1978
- The completion of the new Dorchester Tunnel water supply left Chestnut Hill Reservoir for emergency use only (known as “stand by status”). This was necessary in any event because it was an uncovered reservoir in an urban area, and so the risk of water pollution was high.⁸⁰ It continued to be used until 1995 to collect wasted water and receive pressure-reducing blow-offs from one of the mains.⁸¹
 - A June 22, 1978 Order of Taking contains the provisions for a perpetual ten foot wide easement for the purposes of installing and maintaining a electrical conduit between the Reservation property line and the Commonwealth Avenue right of way as shown on the survey plan in the appendices. The easement is approximately 150 feet long for a total land area of 1,506 square feet. This easement appears to be for the sole purpose of the electrical line.
- 1983
- The MDC received a grant from the Massachusetts Historical Commission (MHC) to carry out an historic inventory of the metropolitan water supply system.
- 1984
- Jane Carolan and the Cultural Resources Group of Louis Berger & Associates produced a report for the MDC called *The Water Supply System of Metropolitan Boston 1845–1926*, which included MHC inventory forms for the Chestnut Hill Reservoir Area and nine individual properties within the area.
- 1985
- The State created the Massachusetts Water Resources Authority (MWRA) as a result of legal action by the EPA and local environmental pressure groups. It was a new, independent authority set up to preserve and improve the quality of Boston’s water resources, especially the Harbor. Under these new arrangements, although the Commonwealth kept ownership of the real property, land and waterworks, the MWRA took over the management of the Chestnut Hill reservoir and the area within the fence.⁸² The MDC retained management responsibility for the surrounding park landscape.⁸³

⁸⁰ MWRA, “Pressure Aqueducts,” <http://www.mwra.com/04water/html/hist6.htm>, 2005.

⁸¹ CDM, *Study*.

⁸² The exact division of responsibilities was recorded in Commonwealth of Massachusetts Metropolitan District Commission Division of Watershed Management and Massachusetts Water Resources Authority, “Memorandum of Understanding:

- 1989
 - The MWRA developed proposals to redevelop the historic buildings on Beacon Street to include a “hall of machines” museum, and office/operations space for some of the MWRA departments.
 - The City of Boston Landmarks Commission designated Chestnut Hill Reservoir and the Pumping Stations a Boston Landmark.⁸⁴
- 1990
 - The Chestnut Hill Reservoir Historic District (including its reservoir, two pumping stations, three gatehouses, garage, terminal chamber and connection chamber) was listed on the National Register of Historic Places as part of the Water Supply of Metropolitan Boston thematic nomination.⁸⁵ The Cochituate Aqueduct Historic District, which ran in part underneath the Chestnut Hill Reservoir, and the Sudbury Aqueduct Historic District that ran to the Sudbury terminal chamber, were also listed.
 - The Chestnut Hill Reservoir was formally decommissioned by the MWRA.
- 1998
 - Historic Massachusetts Inc. (now Preservation Mass) included the Chestnut Hill Reservoir buildings on its list of the state's Ten Most Endangered Historic Resources.
 - GZA GeoEnvironmental, Inc. prepared a report for the MDC/MWRA on the Feasibility of closing and filling in Effluent Gatehouse #1.
- 1999
 - The MWRA contracted with the Boston Preservation Alliance and Historic Massachusetts Inc. (now Preservation Mass) to organize a Disposition Workshop to consider possible uses for 7.9 acres of land declared surplus at Chestnut Hill Reservoir. This was the site to the southeast of Beacon Street that included the historic pumping stations.
 - As a result of the workshop, the state passed legislation appointing its Department of Capital Asset Management (DCAM) to issue a Request for Proposals (RFP) to preserve the historic buildings.
- 2001
 - The MWRA razed several buildings at Chestnut Hill, including the 1889 Biological Laboratory and the 1872 Carpenter Shop.⁸⁶
 - The MWRA passed control of the surplus 7.9-acre site to the DCAM.
- 2002
 - The MIT Department of Architecture ran a Design Studio Level III called “The INSTITUTE of WATER” based around the preservation issues at Chestnut Hill Reservoir.
 - Camp, Dresser, McKee (CDM) produced a report for the MWRA on how best to manage its open reservoirs (including Chestnut Hill) as emergency-only facilities.⁸⁷
 - The MWRA parkland management responsibilities at Chestnut Hill reservoir (everything inside the fence) was transferred back to the MDC. The MWRA retained the right to use the facilities associated with the waterworks (including the two effluent gatehouses) and the reservoir as an emergency back-up water supply, primarily for fire protection purposes. Based on the advice from CDM, it prohibited activities such as swimming, bathing and horseback riding, to protect water quality.⁸⁸ Sections of the fence were removed to allow public access to the original path and the water’s edge.
 - After lengthy public consultation, the Boston Redevelopment Authority issued a Request for Proposals (RFP) to develop the surplus 7.9-acre site. The area was rezoned to allow new construction on the pipe

Division of Properties, Personnel, Policy and Joint Functions,” first drawn up in 1986 and subsequently amended several times.

⁸³ Joanna Doherty, “A Brief History of Chestnut Hill Reservoir,” Commonwealth of Massachusetts Department of Conservation and Recreation, c.2004.

⁸⁴ See the subsequent section of this report on the historic status of the Reservoir for more details of the designation.

⁸⁵ See the subsequent section of this report on the historic status of the Reservoir, for more details of the listing.

⁸⁶ Fisher, “Chronology.”

⁸⁷ CDM, *Study*.

⁸⁸ Commonwealth of Massachusetts, Department of Conservation and Recreation (DCR), “Chestnut Hill Reservation Resource Management Plan, Request for Response,” 2005.

yard site (listed as a non-contributing resource in the National Register nomination), to offset the cost of rehabilitation of the other historic buildings.

- 2003
 - The MDC combined with the Department of Environmental Management (DEM) to become part of a new state agency, the Department of Conservation and Recreation (DCR).
 - Developers Diamond/Sinacori Inc. and E. A. Fish Associates were chosen to buy and redevelop the surplus buildings and land southeast of Beacon Street now called the Waterworks.
- 2005
 - The Department of Conservation and Recreation commissioned Pressley Associates, Inc. to produce a Resource Management Plan for the Chestnut Hill Reservation and surrounding state-owned land and buildings.

Statement of Significance

The second section of this appendix section reviews the documentation relating to the current historic status of Chestnut Hill Reservation, and proposes potential new areas of landscape significance that have emerged as a result of the research conducted for this RMP.

Summary of Current Historic Designations

Chestnut Hill Reservoir has been designated as a City of Boston Landmark⁸⁹ and is listed as part of the overall “Water Supply System of Metropolitan Boston” thematic nomination on the National Register of Historic Places.⁹⁰

Boundaries of Current Historic Designation Areas at Chestnut Hill Reservation

In the Boston Landmark Commission *Report on the Potential Designation of the Chestnut Hill Reservoir and Pumping Stations as a Landmark*, the boundary of the 135-acre Boston Landmark area is defined by assessor parcel numbers and a map. It covers most of the Reservation including the site southeast of Beacon Street that contains the pumping stations complex (parcel 2439); the reservoir, gatehouses and greenbelt (most of 2472); and Chestnut Hill Driveway and surrounding greenbelt (most of 2442-5). It does not include St. Thomas More Road (the rest of parcel 2442-5); the area in the eastern portion of the Reservation containing the drumlin, the old playground, the parking area in front of Gatehouse #1, and the area around the Reilly Rink and Pool (parcel 2473); the Intermediate Gatehouse on Boston College land; or two associated structures in Newton (the Sudbury terminal chamber and a second one not named in the report). Figure 3.2 shows the location of the boundary of the Boston Landmark designation.

The exact boundary of the 135-acre⁹¹ National Register listing for the Chestnut Hill Reservoir Historic District is more difficult to ascertain. The map accompanying the National Register nomination illustrates all the elements within the Metropolitan Water Supply System rather than details of each individual property’s exact location and boundary. From the nomination, the boundary seems to mirror the one for the Boston Landmark with two exceptions: an extension in the southwestern corner to include the Sudbury terminal chamber in Newton (explicitly described in the text accompanying the map), and, implicitly, the Intermediate Gatehouse on land now leased by Boston College, which is a contributing resource described in the MHC inventory form as “within the boundaries” of the area.

The project boundary of the current Resource Management Plan differs in a number of respects from both of the above. It includes assessor parcel 2473 (the drumlin, the old playground, the parking area in front of Gatehouse #1, and the land

⁸⁹ As documented in Boston Landmarks Commission, *Report on the Potential Designation of the Chestnut Hill Reservoir and Pumping Stations as a Landmark* (Boston, 1989).

⁹⁰ As set out in the 1989 “National Register of Historic Places Water Supply System for Metropolitan Boston” thematic nomination. This is based on (and refers the reader to) the 1984 individual MHC inventory forms for each property. Sometimes the information varies between the two sources: where this seems significant, both versions are given here.

⁹¹ The MHC inventory cover sheets for some reason give the district a size of only 95 acres, but the figure of 135 appears in the text.

around the Reilly Memorial Rink and Pool); and St. Thomas More Road, which makes up the remainder of parcel 2442-5; neither of which fall within the Boston Landmark boundary, nor seemingly within the National Register listing for the Chestnut Hill Reservoir Historic District. It also includes the Intermediate Gatehouse, on land leased by Boston College, which falls outside the Boston Landmark boundary but probably within the NR Historic District. The RMP project area includes the MWRA-managed area to the west of the Reservoir (the remains of parcel 2472, known as ‘Shaft 7’) only to note its legal status and restrictions regarding its access and development.⁹² The RMP boundary does not include the small plot of land in Newton that houses the Sudbury terminal chamber, which appears to be part of the National Register listing for the Chestnut Hill Reservoir Historic District.

Period of Significance in Current Historic Designations

The Boston Landmark report does not give a period of significance for the Reservoir.

For the National Register, the thematic nomination ascribes a period of significance for the water supply system of the Commonwealth beginning in 1845 (the date of the first Water Act) and ending in 1926 (an end date signifying that the nomination only covers water supply systems created before the Quabbin Reservoir, authorized by the 1926 Ware River Supply Act and 1927 Swift River Act). The individual Chestnut Hill Reservoir MHC inventory forms give a period of significance of 1868 (approximately when building work started) to 1926, although 1900 is also given as the last date for architectural activity at Chestnut Hill. It was actually 1901, as some of the text makes clear.

The 1868 date given for the start of the period of significance of the Chestnut Hill Reservoir in the MHC inventory forms is defined by the initiation of building construction. In fact, acquisition and development of the land began in 1865.

Areas of Significance

Chestnut Hill Reservoir was assessed as meeting all four criteria for Boston Landmark designation:

- Inclusion in the National Register of Historic Places as provided in the National Historic Preservation Act of 1966 (voted eligible by the Massachusetts Historical Commission in 1977); and containing
- Structures, sites, objects, man-made or natural, at which events occurred that have made an outstanding contribution to, and are identified with, or which best represent some important aspect of the cultural, political, economic, military or social history of the city, commonwealth, the New England Region or the nation;
- Structures, sites, objects, man-made or natural, associated significantly with the lives of outstanding historic personages; and
- Structures, sites, objects, man-made or natural, representative of elements of architectural or landscape design or craftsmanship which embody distinctive characteristics of a type inherently valuable for study of a period, style or method of construction or development, or a notable work of an architect, landscape architect, designer, or builder whose work influenced the development of the city, commonwealth, the New England Region or the nation.⁹³

For the National Register nomination, Chestnut Hill was assessed as significant at a state and local level under two of the four criteria (in the areas of government, architecture and engineering), as one of the historic districts of the water supply system of Metropolitan Boston:

Criterion A: That are associated with events that have made a significant contribution to the broad patterns of our history; and

⁹² DCR, “Request for Response.”

⁹³ Boston Landmarks Commission, 45.

Criterion C: That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.⁹⁴

Even though the MHC inventory forms evaluated the Chestnut Hill Reservoir Historic District and three of its buildings (High Service Pumping Station, Effluent Gatehouse #2, and Low Service Pumping Station) as significant also under Criterion B, the National Register nomination did not list Criterion B. There were no Criteria Considerations in this assessment.

Contributing Features

All the contributing resources or features defined in the Boston Landmark designation and the National Register listing are set out in Table 3.2 below. Many of them do not fall within the current RMP project area, but are included to give a full picture of the designated historic status of the area around the reservoir.

Table C.1: Contributing Resources

Feature	Boston Landmark⁹⁵	National Register⁹⁶
Reservoir/Chestnut Hill Driveway/landscaping ⁹⁷	Significant	Contributing
Effluent Gatehouse (#1);	Significant	Contributing
Intermediate Gatehouse	Not within scope	Contributing
High Service Pumping Station	Significant	Contributing
Low Service Pumping Station	Significant	Contributing
Effluent Gatehouse (#2)	Significant	Contributing
Sudbury Terminal Chamber	Not within scope	Contributing
Connection Chamber	Significant	Contributing
Garage	Contributing significance	Contributing ⁹⁸
Pipe yard	Contributing background building	Non-contributing
Concrete block shed	Not contributing	Not listed

For understandable reasons, neither the Boston Landmark nor the National Register nominations gave detailed descriptions of the landscape around the reservoir, or fully assessed its significance. The Boston Landmark report did include the Driveway and landscaping as a significant resource, and acknowledged its importance as the first “large-scale rural park-like setting” developed by the City of the Boston.⁹⁹ The focus of the National Register nomination was on the Reservoir’s role in the water supply system and so included the Reservoir itself as a contributing resource, but did not mention the surrounding landscape, nor the Driveway or path, presumably because they played no direct role in water supply. Two of the MHC inventory forms did cover the Driveway and path briefly, but only mentioned the surrounding landscape to indicate that it was carefully laid out and well-maintained.

⁹⁴ These criteria definitions are the current National Register wording (found in National Park Service, “Natural Register Bulletin: How to Apply the National Register Criteria for Evaluation,” http://www.cr.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm, 2005). They match the original criteria from the 1989 nomination, s8, which were phrased as: A. illustrating or representing important elements or events in the development of a public water supply system for the Boston metropolitan area; and C. possessing aesthetic or design values characteristic of or notable in public works engineering and architecture of their time.

⁹⁵ This list of resources is taken from the report’s Summary of Architectural Significance, 38ff, rather than the Description of the Property, 5ff. The report added that the intact nature of the complex added to its significance, 38.

⁹⁶ This list of resources is taken from the table of Property Names within each Historic District, annexed to the National Register nomination form.

⁹⁷ The Boston Landmarks Commission list uses the title ‘Chestnut Hill Driveway and Landscaping;’ the National Register table simply says ‘Chestnut Hill Reservoir.’

⁹⁸ The table lists the Garage as a contributing resource, although at one point in the text (s7, 9) it is described as “NC.”

⁹⁹ Boston Landmarks Commission, 38.

Potential New Areas of Landscape Significance

The above section describes the current historic status for the Chestnut Hill Reservation and explains how its historical importance to date has been evaluated and designated. The research and analysis conducted for this Resource Management Plan sheds some new light on the significance of the landscape at Chestnut Hill. The previous NR documentation considers the Chestnut Hill Reservoir as an integral part of Boston's water supply system, with an associated period of significance of 1845-1926 for the entire system, and 1868-1926 for Chestnut Hill Reservoir in particular. A related but distinctly different historic context is the importance of the Reservoir and its associated landscape as a public park with scenic and recreational values, both as an early Boston park and later as part of the Metropolitan Park System. This, combined with a new evaluation of potential archaeological sensitivity by the DCR Archaeologist (based on recent experience from Spot Pond in the Fells), gives a number of important new historic contexts for the Reservation, as explained below. This analysis shows how the historic character of the landscape at Chestnut Hill can be understood as it changed and developed during its long periods of significance. It helps identify features which can be considered historically significant, even though they may have been installed after the primary period of significance defined by the National Register nomination had ended, and gives a new context for those features as part of the evolution of the landscape from rural park in the 1860s to part of the MDC park system from 1919. As such, the analysis below can inform decisions about the future management of the landscape at Chestnut Hill Reservoir.

Prehistoric Overview and Site Potential

Because of historic development, urbanization and the fact that the professional study of local prehistory is still in its infancy, there is unfortunately not much detail which can be drawn from the existing archaeological record of Brighton and its surrounding environs. However, some relatively good information from a number of sites in neighboring communities on the lower Charles River can be used predict what was happening in Brighton at similar locations to the Chestnut Hill Reservoir.

As the place names Nonantum Hill (which is located just a short distance northwest of Chestnut Hill Reservoir) and Waban (in the adjacent town of Newton) recall, this area was the home of Native Americans long before the first European ship even caught sight of these shores. Indeed, the accounts of the early explorers and settlers describe small gardens in forest clearings, and numerous villages. The woodlands that once covered Brighton, Brookline, Allston, Newton and Boston were once filled with game and edible plants, while the Charles River teemed with fish and the original human occupants of the area did not have to search far for plentiful food resources.

Over 300 years of historic settlement and development has transformed the area into an urban landscape, and the limited number of prehistoric archaeological sites which lie within the present day boundaries of Boston and its surrounding communities are not a true reflection of this areas importance in prehistoric times. Indeed, several hundred sites are recorded in the general Metropolitan Boston region. Combined, these sites indicate that this portion of Massachusetts has been more or less continuously occupied for over 12,000 years.

Between 12,000 and 9,000 years ago the first true human "colonists" entered this area from the south and southwest. Archaeologists call these early settlers Paleo-Indians, and when they arrived in southern New England, the glacier had not long receded and the landscape was tundra-like, similar to the northern reaches of modern day Canada. Over the next several thousand years, climatic amelioration encouraged a succession of forest cover changes and the barren landscape was slowly replaced by a spruce parkland/woodland, then by a pine/oak forest, and slowly by the mixed deciduous forest of today. As habitats changed, local animal species were forced to adapt, relocate or become extinct. At the same time, sea levels were continuously rising, submerging much of the coastal plain and creating estuaries along the newly defined coast.

Despite all of the environmental and ecological change, or probably because of it, the local hunter/gathering peoples flourished. The archaeological record suggests that the local Native American cultures were extremely resilient and they appear to have adapted quite readily to all of the environmental changes. Cultural data, principally in the form of stylistic changes in stone tools and implements through time, indicate that the local Native Americans changed their technologies and subsistence strategies to take advantage of new plant and animal resources. Based primarily on the presence of distinctive

artifact types, archaeologists have recognized the presence of Native American peoples in, or around, Boston (including Brighton) from the time of the first Paleo Indians, and throughout the following Archaic and Woodland periods.

One particularly important site which appears to have been a major center of human occupation throughout most of prehistory was located on the north bank of the Charles River, diagonally across the river from Newton.

Prior to historic damming this location was situated next to the first set of falls on the Charles River, just above the head of the estuary. The juxtaposition of prehistoric site location and natural topographical characteristics were by no means coincidental. Tools and implements recovered by both amateurs and professionals from this area are similar to those which have been dated to the Paleo Indian period, between 9,500 to 12,000 years ago. Additional archaeological evidence suggest that Native Americans returned to this riverside location from that time through each succeeding period of prehistory (Early, Middle and Late Archaic; Early, Middle and Late Woodland).

By about 8,000 years ago sea levels had risen sufficiently after the retreat of the last glacier that the Charles River estuary began to form. The migratory patterns of the numerous anadromous fish species (those that spend their adult life in salt water and return to freshwater to spawn) also became established about this time. An obstruction of bedrock in the lower reaches of the river created a set of falls, and from that time until Europeans entered the region in the 17th century, the location was probably one of the most important fishing stations in the region.

The primary attraction of this location, as well as others like it in the region was the seasonal availability of a nearly endless supply of fresh fish. Species such as salmon, herring, alewives, and shad enter rivers such as the Charles to swim upstream and spawn in freshwater lakes. During their spring runs these fish gather at the base of falls in such quantities that they could literally be harvested with simple baskets, traps or spears. In this manner, and with the expenditure of very little physical energy, a surplus of food (with the added attraction of the highly prized and nutritious roe) could be smoked and cured, thereby providing important supplemental food for the long, lean New England winter.

So important were these subsistence activities, that by early historic times it is recorded that family groups traveled considerable distances to take up brief residence at waterfalls. By the Contact Period about 475 years ago, after several thousand years of adaptation, the once simple subsistence activities had transformed into major "events" or "happenings", and gamesmanship, oratory skills, and gift exchanging had become important for reaffirming group identification, to perpetuate cultural ways, and to create trade networks and alliances.

Springtime was certainly not the only season of the year that this area was occupied. Many families probably lingered here to exploit the numerous other fish which made the estuary their breeding ground and nursery (smelt, tomcod, winter flounder, sturgeon), or to gather abundant shell fish from the local marshes. As the Boylston Street Fish Weir attests, fishing within the Charles River estuary was an important subsistence activity. In later prehistoric times, groups remained here to tend gardens which were planted in the fertile soils adjacent to the Charles River. During the winter months the Native American inhabitants of the Greater Boston area (including Brighton) would have dispersed, and small groups, probably extended families probably moved into the more sheltered interior uplands which surrounded the Boston Basin. During these months the focus of subsistence activities shifted to the gathering of ripening nuts, berries and seeds, and to hunting and trapping the various mammals, reptiles and birds in the upland forests.

Prehistoric Site Potential of the Chestnut Hill Reservoir

Although there are currently no prehistoric archaeological sites recorded in the Massachusetts Historical Commission's files for Chestnut Hill Reservoir, there is good reason to believe that sites may have existed prior to the construction of the Reservoir, and that if they did exist they may have even survived the transformation of the former wetland into a water-holding reservoir. The presence of Native Americans in this portion of Greater Boston is conclusively demonstrated by the presence of a large prehistoric site (19-MD-179) which incorporates nearby Hammond Pond and Hammond Pond Reservation.

In the 1860s, the proponents for a new water source for Boston found what they thought was a perfect location: one hundred acres on the Brighton / Newton borders. The topography of the site was perfect for the purpose; it was a natural basin and it was elevated so waters from a reservoir therein could be gravity fed to surrounding communities. Although historic maps are not consistent in depicting whether or not there was standing water or a significant wetland present, two maps do show a brook running across the site, and it was described as marsh and meadow.

Such a natural feature would have been attractive to Native Americans because it would have been a valuable natural resource base for plants and animals. Any well drained level ground around the wetland would have been attractive for habitation. It is believed that the prehistoric sites within the present day Arnold Arboretum in nearby Jamaica Plain were probably the result of short term recurrent fall/winter occupation. It is probable that locations around the future reservoir site were also utilized during the fall/winter, as locations along the Charles River, its tributaries and its estuaries were the focus of subsistence activities during the spring/summer.

For property managers the biggest question, after having determined that Chestnut Hill Reservation is archaeologically sensitive, is whether prehistoric sites could have survived the massive landscape modifications that transformed the area into a reservoir (actually two adjacent bodies of water). The answer to this question is uncertain but, as the three prehistoric sites that were discovered in 1991 along the eastern shores of Spot Pond, Stoneham suggest, survivals are indeed possible.

Spot Pond, which was the central piece of the Middlesex Fells Water System, was transformed from a less than adequate reservoir in 1898–1901 to a state-of-the art reservoir. In order to accomplish this, the Olmsted firm was commissioned and the water level was increased by nine feet and its surrounding banks were stripped of soil and re-contoured. Despite historic photographs taken at the time of construction that give a sense of complete and thorough landscape change, it is apparent that that change occurred only in places and that ground around the reservoir remains largely undisturbed. Thus, when the Public Archaeology Laboratory conducted their survey of the new MWRA water line they encountered three small prehistoric sites (probable stone tool manufacturing sites) along the eastern shore of Spot Pond. The waterline was relocated and the sites were preserved.

A similar scenario could exist at Chestnut Hill, where blasting, excavations and extensive earth modifications transformed the site into a reservoir. However, any level, elevated and well drained landform around the margins of Chestnut Hill Reservoir could potentially contain undisturbed and therefore potentially significant prehistoric archaeological resources.

Other Potential Historic Contexts and Associated Secondary Periods of Significance

From the detailed research conducted for this RMP, it is clear that the landscape at Chestnut Hill is likely significant in its own right as the first large-scale rural public park in Boston. As early as 1869, before the Reservoir was completed, the Chestnut Hill landscape had “already become a favorite place of resort.” The park thus pre-dates Boston’s 1875 Park Act, which created a municipal commission to consider a park system for the city and which led to the work to create the Emerald Necklace beginning in 1878. Thus, the secondary period of significance associated with early rural park begins in 1865 when the Water Board began developing the land. In the following year, the idea of a pleasure drive or carriageway around the Reservoir won immediate, enthusiastic public support.

The landscape is also likely significant for its association with Frederick Law Olmsted Sr., who in 1887 conceived the ‘Chestnut Hill Loop’ to join the Reservoir to the pleasure grounds he was designing elsewhere in the city. The Chestnut Hill Driveway remained one of the most popular pleasure drives in the city in the late nineteenth and early twentieth centuries, inspiring other cities, such as Cambridge, to create pastoral landscapes and pleasure drives around their municipal reservoirs. During this secondary period of significance, the Water Board carried out two major plantings of elm trees around the reservoir (in 1876 and 1887), resurfaced at least some of the Driveway to make it suitable for automobile use (1916), and continued to meticulously maintain the landscape. The development of the area around the Reservation and the arrival of street cars on Beacon Street (1889) and Commonwealth Avenue (1909) no doubt added to the number of people able to enjoy the Reservation’s attractions. The secondary period of significance for the Chestnut Hill landscape as an early public park, pre-dating the Boston park system likely ends in 1919 when the Metropolitan District Commission was created by an act of the legislature and the new organization assumed responsibility for Chestnut Hill Reservoir and its landscape.

Another related historic context for the Chestnut Hill Reservation is its importance as part of the Metropolitan Park System. This context begins in 1919 when the MDC assumed responsibility for the Reservoir. This secondary period includes the erection of the decorative iron picket and chain link fence around both basins and its accompanying gates (1928-29), to protect the quality of the water supply. It also includes the creation of the new outer path around the water to allow continued public access to the site. This secondary period of significance comes to an end as the creation of the Quabbin Reservoir results in the Lawrence Basin being declared inactive in 1948. This smaller reservoir was sold to Boston College; the basin was filled in, the Influent Gatehouse razed, and the Driveway and its surrounding landscape became the site of the College's Lower Campus. Defining the end of the secondary period of significance for the Chestnut Hill landscape as c.1948 also reflects the National Park Service guidance that properties achieving significance within the past 50 years are not generally considered historic or eligible for inclusion on the National Register of Historic Places unless they demonstrate transcendent importance.¹⁰⁰ However, the MDC, and later the DCR, have continued to manage the Reservoir landscape as a public park up to the present day.

Analysis of Historical Integrity

The following analysis briefly summarizes the degree to which the Chestnut Hill Reservation retains the features, materials and spaces that convey its historic associations. A list of contributing resources for Chestnut Hill is also included, which expands upon those already listed on the existing National Register nomination.¹⁰¹

Integrity is the ability of a property to convey its historic identity, or the extent to which a property evokes its appearance during a particular historic period, usually the period of significance. While the evaluation of integrity is often a subjective judgment, particularly for a landscape, it must be grounded in an understanding of a property's physical features and how they relate to significance. The National Register of Historic Places identifies seven aspects of integrity (location, design, setting, materials, workmanship, feeling, and association). Retention of these qualities is essential for a property to convey its significance, though all of the seven qualities need not be present to convey a sense of past time and place.

For the historic context related to the metropolitan water supply system (1865-1926), Chestnut Hill Reservation possesses integrity of location, setting, materials and workmanship, with diminished design, feeling and association. For the additional historic contexts associated with the Reservation as a public park (1865-1919 and 1919-1948), it possesses integrity of location, setting, workmanship and association, with diminished design and some reduction in feeling, especially from the period as an early public park. The reservoir and water supply buildings that lie within the current Reservation have already been assessed as meeting National Register Criterion A in illustrating or representing important elements or events in the development of the public water supply system for the Boston metropolitan area; and as meeting National Register Criterion C as possessing aesthetic or design values characteristic of or notable in public works engineering and architecture of their time. In addition, the landscape may meet National Register Criterion C as an early example of a 19th century public park developed by the City for the residents of Boston. Resources associated with the property such as the Bradlee Basin, its embankment and original path, the parkland and Driveway, and Effluent Gatehouses #1 and #2 contribute to the landscape's significance. Areas of significance likely include architecture, landscape architecture, industry, engineering, recreation, politics/government and social history.

Table C.2: Comparison of Integrity for the Landscape at Chestnut Hill Reservation

Aspects of Integrity	PRIMARY PERIOD OF SIGNIFICANCE Water Supply System 1865-1926	SECONDARY PERIODS OF SIGNIFICANCE	
		Early Boston Park 1865-1919	Metropolitan Park System 1919-1948
Location	Retains location. However, the boundaries of the	Retains location. However, the boundaries of the Reservation	Retains location. The boundaries of the Reservation have changed with

¹⁰⁰ National Register *Bulletin 15*.

¹⁰¹ This evaluation is derived from the historical and inventory data gathered for analyzing the resources and does not represent an official determination of eligibility (DOE) for the Chestnut Hill Reservation landscape.

Aspects of Integrity	PRIMARY PERIOD OF SIGNIFICANCE Water Supply System 1865-1926	SECONDARY PERIODS OF SIGNIFICANCE	
		Early Boston Park 1865-1919	Metropolitan Park System 1919-1948
	Reservation have now changed with the loss of the Lawrence Basin to the west.	have now changed with the loss of the Lawrence Basin to the west and new areas added to the east and northwest.	the loss of the Lawrence Basin to the west and new areas added to the east and northwest.
Design	Diminished design. While the Reservoir retains many of the design elements associated with the initial water supply system, the loss of Lawrence Basin and other historic structures diminishes design integrity.	Retains many elements of design as reflected at the end of 1919. Some subsequent changes, including the loss of the Lawrence Basin and elements of the 1977 redevelopment, diminish design integrity.	Retains most elements of design existing in 1948. Some subsequent changes, including elements of the 1977 redevelopment, diminish design integrity.
Setting	Retains setting as water-body surrounded by open space. Additional adjacent development since 1926 diminishes setting.	Retains setting as water body, scenic driveway, and place for public recreation. Additional adjacent development since 1919 diminishes setting.	Retains setting as water body, scenic driveway, and place for public recreation. Additional adjacent development since 1919 diminishes setting.
Materials	Retains some landscape and architectural materials associated with the initial reservoir construction.	Retains some landscape materials and parts of the tree collection. Some loss of plant materials (including many of the elms), the loss of the original post and rail fences, and a lack of maintenance diminishes landscape materials.	Retains most landscape materials associated with the metropolitan park system. Some loss of plant materials and a lack of maintenance diminish landscape materials.
Workmanship	Retains workmanship in gatehouses.	Retains workmanship in gatehouses.	Retains workmanship in gatehouses.
Feeling	Diminished feeling; the loss of the Lawrence Basin and some of the historic structures and functions reduces feeling.	Diminished feeling; many parts of the landscape are recognizable from the period ending in 1919, but the overall feel of the manicured landscape is reduced.	Retains the feeling associated with the metropolitan park system.
Association	Compromised association, as the reservoir no longer functions as a full part of the water supply system, the adjoining Lawrence Basin and driveway are gone, and the neighboring Pump House complex is currently being rehabilitated for new uses including housing.	Retains association. Despite management by the DCR, the landscape retains association as an early Boston park.	The landscape retains association with the DCR (formerly MDC) park system.

Contributing Features within the Reservation Associated with the Additional Historic Contexts and Secondary Periods of Significance

The likely contributing (extant) features from the two additional periods of significance (1865-1919 and 1919-c1948) are listed in the tables below. These tables include and expand on the features already listed in the existing National Register nomination for the Chestnut Hill Historic District. The third table lists likely contributing features that are located below ground or can only be viewed in an archaeological context.

Table C.3: Contributing Features Associated with Secondary Periods of Significance

Date	Feature	Preliminary Evaluation	Map Number
1866	Embankment	Contributing structure	6
c.1869	Effluent Gatehouse (#1)	Already assessed as contributing on the National Register nomination	1
c.1869	Driveway	Contributing structure	4
c.1869	Inner Gravel Path	Contributing structure	5
c.1869	Landscaped areas surrounding Bradlee Basin (in the Spring we will identify individual heritage trees likely to date from this period)	Contributing site	7
1870	Bradlee Basin	Already assessed as contributing on the National Register nomination	3
1898	Effluent Gatehouse (#2)	Already assessed as contributing on the National Register nomination	2
1928	Iron picket and chain link fence along north side of Bradlee Basin	Contributing structure	9
1929	Iron picket fence along south side of Bradlee Basin and accompanying gates	Contributing structure	9
c1929	Outer Path	Contributing structure	10
Date	Features below ground or viewable only in an archaeological context	Preliminary Evaluation	Map Number
1848	Part of Cochituate Aqueduct underneath western edge of RMP project area	Already assessed as contributing on the National Register nomination as part of the Cochituate Aqueduct Historic District	8
1850	Original route of Beacon Street, which ran across what is now Bradlee Basin	Not extant; archeological remains only	<i>To be located in final map</i>
1866	Houses and stables constructed on site for workers, horses and oxen	Not extant; archeological remains only	NK
1866	Brick drainage sewer	Likely contributing site	NK
1870	Grand Entrance Arch	Not extant; archeological remains only	<i>To be located in final map</i>
1887	Attendant's house, location and ultimate fate now unknown	Not extant; archeological remains only	NK

Non-Historic Additions

A number of features have been added within the boundaries of the current RMP study area since 1948, when the latest secondary period of significance ends. These are considered non-historic additions to the property. They include the parking spaces located north and south of the Chestnut Hill Driveway, the single and double head light fittings on the Driveway, the picnic tables and grilles north of the Driveway, the Chestnut Hill Reservoir Community Gardens and the scenic overlook. In addition, the Reilly Memorial Pool and Rink and their associated walkway and service driveway, the parking lot adjacent to Effluent Gatehouse #1, the children's playground and the some box-style pedestrian lights have been added on land to the east of the Reservation, which lies outside the boundary of the Boston Historic Landmark designation and appears to be outside the Chestnut Hill Reservoir Historic District. Sections of the original iron fence around the reservoir were replaced in 1977, but these are considered to be repairs to a historic feature rather than a non-historic addition to the landscape.

Identifying non-historic additions to the landscape should not automatically lead to their removal. Change is inherent in cultural landscapes such as the Chestnut Hill Reservoir; it results from both natural processes and from human activities. This dynamic quality inherent in landscapes is balanced by the continuity of distinctive characteristics.¹⁰² In terms of managing the site, it may be desirable to identify and remove or adjust any later additions that are judged to be substantially detracting from its essential historic character.

The Secretary of the Interior's Standards for the Treatment of Historic Properties

Standards for Rehabilitation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new material will match the old in composition, design, color, texture, and where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

¹⁰²National Park Service, "The Secretary of the Interiors Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes" <http://www.cr.nps.gov/hps/hli/introguid.htm>

Appendix D

EXISTING DCR RULES AND REGULATIONS

Commonwealth of Massachusetts
Department of Conservation and Recreation

dcr



RULES AND REGULATIONS

350 CMR 2.01; Government and Use of the Reservations and Parkways Under the Care and Control of the Department of Conservation and Recreation.

(1) Definition of Reservations and Parkways

Reservations and Parkways shall include all boulevards, roadways, driveways, bridges, structures, land, beaches, ponds, lakes, rivers and other waters under the care and control of the Department of Conservation and Recreation.

(2) Rules and Regulations

- (a) Entrance on and exit from reservations, parkways or waterways by vehicular traffic shall be made over designated areas only.
- (b) No person is allowed on DCR Reservations except during the hours from dawn to dusk unless specified otherwise at the site, or by permit. Use of Parkways and bridges is not restricted.
- (c) The DCR may post rules restricting recreational activity to designated areas and times.
- (d) Cookouts shall be allowed only in places designated: and the use of grills, hibachis, and other apparatus for cooking is permitted subject to the direction of an Authorized Police Officer or DCR Ranger. Picnics are allowed except in those areas where expressly prohibited. Open fires are prohibited except by permit from the Commissioner or his designee.
- (e) Drunkenness, breach of peace, profanity, amplified sound, or disorderly conduct offensive to the general public are strictly forbidden. Possession of alcoholic beverages is forbidden, except when authority has been granted by the Commissioner in writing.
- (f) No person shall willfully obstruct the free passage of vehicles or persons.
- (g) No person shall cause or permit any animal owned by him or in his custody or under his control, except a dog when restrained by a leash not exceeding seven feet in length to roam or be at large in, on, or through any reservation or parkway, or to be hitched or tied to a fence, tree, bush, shrub, or any object or structure except as otherwise provided, nor ride or drive a horse or animal not well broken and under proper control and then only on such roadways or bridle paths where authorized; nor neglect to refuse to stop, place, change, or move the position of said horse or animal as directed by an Authorized Police Officer or DCR Ranger. Owners are required to properly dispose of their dog's animal waste.
- (h) The use of bicycles, or other means of transportation including in line skating may be prohibited in areas so designated on a site by site basis.
- (i) No person, except in an emergency, shall bring, land, or cause to descend within any reservation or parkway any airplane, parachute or other apparatus of aviation except by written permit from the Commissioner or his designee.

- (j) No person shall injure, deface, destroy, remove or carry off any sign, structure, facility, tree or any other property or equipment, real or personal, under the care and control of the Department of Conservation and Recreation.
- (k) Parades, games, fairs, carnivals, bazaars, gifts or solicitations for raising or collecting funds shall not be permitted without written Commissioner approval.
- (l) Lotteries, raffles, gambling and games of chance are prohibited; and no person shall have possession of machinery, instruments or equipment of any kind for use for these purposes on DCR property.
- (m) Public assemblies of more than 25 persons shall not be allowed without a written permit from the Commissioner or his designee.
- (n) No person shall engage in any business, sale or display of goods or wares without a written permit from the Commissioner or his designee.
- (o) All signs and advertising are prohibited on DCR property without a written permit from the Commissioner.
- (p) No person, unless authorized by law or permit, shall have possession of or discharge any weapon, firearm, fireworks or other explosive.
- (q) Hunting or trapping of animals or birds shall not be permitted unless specifically authorized by law, including the Colonial Ordinances of 1641-47, or by the Commissioner. Injuring or otherwise disturbing animals or birds or their habitat is prohibited.
- (r) No person shall drop, throw, or place and allow to remain any litter, garbage, or other effuse, except in the receptacles provided; nor throw a lighted match, cigarette butt or any other burning substance on the ground or in said receptacles; nor bring or cause to be brought within any reservation or parkway any garbage, refuse or material for the purpose of dumping, or deposit same within said receptacles.
- (s) No person shall drop, throw or place any litter, garbage or refuse in any of the rivers or waters under the care and control of the DCR, or in any other way pollute or contribute to the pollution of such rivers and waters.
- (t) No person shall refuse or neglect to obey any posted regulatory sign or the lawful directions of an Authorized Police Officer, DCR Ranger or person in charge.

Appendix E

MAINTENANCE STANDARDS

Maintenance Standards

Park usage and maintenance are directly related to each other. An increase in park usage demands greater maintenance work while well-maintained parks attract more users. Given this interdependence between usage and maintenance, a maintenance and management plan is required to ensure that an increase in park usage is supported by an increase in the quality and quantity of park maintenance. The *Maintenance Plan for the Muddy River Parks of the Emerald Necklace, Muddy Rivers Restoration Project* is referenced, herein, to establish a framework for parks and open space maintenance standards based on the following parameters:

- Calculating square foot maintenance cost;
- Articulating higher maintenance standards; and
- Establishing performance standards based on work activities.

Square Foot Maintenance Cost

It is complex to measure and manage park maintenance work without defining the specific work items or procedures and there are many methods for measuring maintenance work, this RMP uses the analysis in the Muddy River Restoration Project and applies it to Chestnut Hill Reservation.

In 2001 when The *Maintenance Plan for the Muddy River Parks of the Emerald Necklace, Muddy Rivers Restoration Project* was prepared the following cost per square foot was estimated at \$0.8/square foot for the Arnold Arboretum in Boston and \$0.12/square foot for Prospect Park in the Borough of Brooklyn, New York. The Maintenance and Management Plan for the Muddy River Parks of the Emerald Necklace established a need of \$0.10/square foot.

This analysis assumes an average desired standard of at least \$0.06/square foot for CHR which is a high expectation based on current maintenance. If the site is approximately a total of 120 acres and the water body is approximately 84 acres the area to be maintained including the water's edge would be approximately 36 acres. For the purpose of this exercise we are rounding this to 40 acres of park land to maintain. The estimated maintenance operating budget to support Chestnut Hill Reservation could therefore range within the following:

Maintenance cost at 0.04 \$ / s.f. = $0.04 \times 40.0 \text{ acres} \times 43,560 \text{ square feet per acre} = \$ 69,696.00$

Maintenance cost at 0.06 \$ / s.f. = $0.06 \times 40.0 \text{ acres} \times 43,560 \text{ square feet per acre} = \$ 104,544.00$

Maintenance cost at \$0.08 / s.f. = $0.08 \times 40.0 \text{ acres} \times 43,560 \text{ square feet per acre} = \$ 139,392.00$

Performance Standards

The following maintenance categories will help to define the tasks required to maintain Chestnut Hill Reservation:

1. **General Maintenance** – work related to appearance of the park and sanitary conditions including litter pickup and trash collection from receptacles;
2. **Horticultural Care** - work related to care of shrubs, perennials, small trees, turf care, mowing, pruning, woodland management, and tree care;

3. **Repair and Preservation** – work related to functioning and safety of park equipment and facilities, preventative maintenance, and repair including that of park lighting, repair of walls and fence, benches, park structures, and graffiti removal; and
4. **Water Body Management** – work related to maintaining park water bodies including monitoring, cleaning, edge repair, and removal of invasive species.

In addition, strategies need to continue or need to be developed to increase maintenance capacity through a combination of the following:

- Improved management;
- Increased staff productivity;
- Increased staff strength;
- Reduction of non-productive time; and
- Possible use of contracted services.

In his book, *Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards*, David N. Ammons states that very limited information exists regarding labor ratios for park maintenance activities. Ammons also indicated that a report “prepared by a management analysis team in Pasadena, California, concluded that a ratio of one park maintenance employee for every 7-10 acres should produce ‘A-Level’ service—in other words, ‘a high-frequency maintenance service’.”¹ However, he points out that “standards of the maintenance-employee-per-park-acreage variety and corresponding statistics reported by individual cities, are complicated by the question of developed versus undeveloped park acreage and therefore should be interpreted cautiously.” Among ten cities he examined, ratios of 10.6 to 84.7 acres maintained per maintenance employee were reported. He suggests that the following labor ratio guidelines devised by the NRPA may be useful to the DCR in deciding on its own standards, procedures, and resource requirements.

Table 4.21: Labor Ratios for Selected Parks and Recreation Maintenance Activities

Task		Labor Hours
Mowing 1 Acre, Flat Medium Terrain at Medium Speed		
	20" walking	2.8 per acre
	24" walking	2.2 per acre
	30" riding	2.0 per acre
	72" (6-foot) riding	0.35 per acre
	Bush hog	0.5 per acre
Trim		
	Gas powered (weed eater)	1.0 per 1,000 linear ft.
Planting Grass		
	Cut and plant sod by hand (1.5' strips)	1.0 per 1,000 sq. ft.
	Cut and plant sprigs by hand (not watered)	10.9 per 1,000 linear ft.
	Seed, by hand	0.5 per 1,000 sq. ft.
	Over seeding, Reconditioning	0.8 per acre
Fertilize Turf		
	24": sifter spreader	0.16 per 1,000 sq. ft.
	Hand push spreader 36"	2.96 per acre

¹ City of Pasadena [CA], Management Audit Team, 1986, p. 9.4

	Tractor towed spreader 12"	0.43 per acre
	Weed Control	
	Spraying herbicide w/fence line truck, tank sprayer 2 ft. wide (1" either side of fence)	0.45 per 1,000 sq. ft.
Leaf Removal		
	Hand rake leaves	0.42 per 1,000 sq. ft.
	Vacuum 30"	0.08 per 1,000 sq. ft.
Tree Removal		
	Street tree removal	13.0 per tree
	Street tree stump removal	3.5 per tree
	Park tree removal	5.0 per tree
	Park tree stump removal	2.0 per tree

Source: *Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards*, David N. Ammons

Higher Maintenance Standards

In these performance standards, maintenance activities have been generally classified under Levels I, II, and III depending on intensity and frequency of work with Level I maintained at a high level of care while Level III is maintained in a more natural state. The activities have been categorized into landscape features, general features, trash removal, and graffiti removal. In these performance standards control and maintenance of invasive species has not been classified under levels.

Landscape Features

Turf Maintenance:

Without mowing, most turf grasses will grow to heights of 2' to 3' feet. Limiting turf to 2" to 2 ½" puts tremendous stresses on the plant and increases the level of necessary inputs, especially watering. Turf that is cut higher (3"-4") is better able to withstand the pressures of foot traffic, equipment traffic and drought. Proper mowing practices and equipment minimize this stress. Grass clippings are to be left on all turf areas. This practice will decrease fertilizer requirements, increase the health of the turf's root system, and eliminate the need for disposal or composting of grass clippings. All turf areas should be aerated at least twice each year.

The soil in the landscape is the most important natural resource in the park as it sustains all plant life, including trees, shrubs and especially turf grass. Soil tests need to be done in selected areas on an annual basis. Without the information from a soil test, all management decisions regarding the soil result in guesswork. Soil tests should be conducted in early spring (March). Soil pH for turf should be between 6.0-6.5. Base saturation for potassium (K) should be 2-4%; magnesium (Mg) should be approximately 14%; and calcium (Ca) should be 60-70%.

The equipment is an integral part of turf maintenance and must be maintained on a regular basis. It should be lubricated, with blades sharpened to ensure clean cut and reduce wear and tear on the engine. The desired output related to various equipment is as follows:

580D Groundsmaster	20sec / 1000 s.f.
Tractor & Flail	1.2min / 1000 s.f.
Gravely / Hydromower	6.0min / 1000 s.f.
Lawnmower	9.0min / 1000 s.f.
Line Trimmer	20.0min / 1000 s.f.

Tractor w/aerator or spreader attachment	1.0min / 1000 s.f.
Walk behind aerator or spreader	6.0min / 1000 s.f.

The following are the common levels of turf maintenance for public parks. The Turf Level I does not currently exist at Chestnut Hill Reservoir and probably will not in the future, but it is incorporated herein just to show the highest level.

1) Turf Level I: Mowed to height of 3” every 5-7 working days. Annually, the turf is evaluated for restoration, aeration, overseeding, disease, and fertilizer treatment. Soil tests in selected areas are performed annually and mineral soil amendments (Limestone, potassium fertilizer, etc.) should be applied if necessary in accordance with soil testing results. Before lime applications are made, the soil should be aerated. Nitrogen application of 1lb. /1000 square feet should be made as necessary in the spring (late April). Phosphorous fertilizers should not be applied near water surfaces. Phosphorous-containing fertilizers contribute to eutrophication of water and the growth of aquatic weeds. Turf restoration (overseeding) is carried out with a slice-seeder, during the months of late August through September if necessary. When turf is restored, a snow fence is erected to protect the grass. The performance standard is set at less than 2% trash visible with a 0% trash tolerance goal.

2) Turf Level II: Mowed to height of 4” every 7-12 working days. The soil is tested and lawn areas are fertilized as required by testing results and some weeds and bare spots are acceptable, but routinely corrected. Less than 5% trash with 0% trash tolerance goal.

3) Turf Level III: Mowed to height of 4.5” every 14-18 working days. This turf requires no fertilizer, no irrigation, occasional repair, some weeds are tolerated, and it can be allowed to wear out and grow through rest cycles. Less than 5% trash with 0% trash tolerance goal.

General Weed Control for Turf:

Weed control can be applied at curb lines, fence lines, clearance along steps, cracks/ crevices, around trees, mulched planting beds, and public health hazard areas (Poison Ivy infested areas). This does not apply to the water’s edge. It can be done either mechanically using sprayers, line trimmers, and other turf maintenance equipment or manually by hand weeding, by weed wacker, ice scrapper, flat tree spade shovel, etc. All pesticide application must be performed under Massachusetts Pesticide Control Act of 1978; all chemicals shall be approved by MWRA and the Conservation Commission and applications must be documented. The desired output with regard to equipment and personnel is as follows:

Spray with small sprayer	40min / 1000 s.f.
Spray with truck sprayer	14min / 1000 s.f.
Trim with line trimmer	20min /1000 s.f.
Weed (manually)	60min / 1000 s.f.

Shrub Planting Area Maintenance:

Shrubs provide numerous functions and are a vital part of the park landscape. When properly selected and maintained, they serve as focal points, accents, help control circulation, and provide an aesthetic appearance, complimenting and enhancing the surrounding park landscape.

The annual maintenance program for new and established plants depends on the type of plant material and the skill levels of the personnel responsible for the work. No shearing of shrubs should occur within Chestnut Hill Reservation. Hand pruning is always preferred in order to maintain the natural character of the plant species.

1) Planting Areas Level I: Less than 10% weeds and 5% deadwood in bed. At CHR this would include shrub beds in the area of the rink. They will have a manicured appearance reflecting the nature of the space. The shrub species will be kept pruned on a regular basis, deadwood will be removed, and in general the maintenance will be of a high level. Shrub beds and small trees are edged and mulched each spring. Shrub beds are maintained and weeded monthly and invasive species will be removed and controlled monthly. Shrub beds and small trees are watered as required. Trash removal completed minimum of once per week. Leaf removal is completed in fall and spring.

2) Planting Area Level II: Less than 10% weeds and 10% deadwood in bed. At CHR this would include shrub beds in the area of the gateways. This includes shrub beds with plants that have a more bushy irregular appearance in keeping with their surroundings and a much lower level of maintenance. These shrubs look reasonable if kept untrimmed. Shrub beds and small trees are edged and mulched each spring. Shrub beds are maintained and weeded and invasive species removed or controlled in late spring and early fall. Shrub beds and small trees are watered as required. Trash removal is completed bi-weekly. Leaf removal is completed in fall and spring.

3) Planting Area Level III: Less than 10% invasive species. These areas typically abut woodland areas and are naturalistic areas that serve to provide an understory, a visual screen or buffer between intensively used areas and wildlife habitat. Use is typically low level and informal. The shrubs are allowed to achieve their natural form. The shrubs will rarely be pruned and species will be chosen that will flourish in the particular site and light conditions and will grow to the desired height without any pruning or shaping. Invasive species will be monitored and removed or controlled two times per year. Trash removal is completed spring and fall. There is no leaf removal.

Trees/Woodland Maintenance:

Implementation of regular trees in grass and a woodland tree maintenance program that will preserve the health and structural integrity of park trees is included in this task. All trees will be inspected seasonally and treated according to the integrated pest management requirements. More than any other landscape element, trees provide the most prominent visual component in the landscape. Tree preservation and management involves the protection of the canopy, trunk and roots. Trees in public parks are subject to intensive visitor use. Over time this use can have severe impacts with ongoing public use including the following impacts:

- Compaction and lack of soil fertility begins to change the soil both physically and chemically.
- Rainwater begins to runoff (causing soil erosion) rather than percolating down through the soil and to the plants' roots.
- Groundcover materials such as turf or understory are lost or damaged.
- Exotic invasive species begin to seed in the woodlands (such as Ailanthus, Rhamnus, Norway Maple, Malus spp., Euonymus, Berberis, Celastrus, and Ampelopsis) and the character of the woodland begins to deteriorate. Native invasive species such as Black Cherry and Black Locust also seed.
- Native shrubs and native understory trees are lost to invasives and overuse of the areas.
- Older native trees cannot compete for nutrients and water and begin to decline; tops die back.
- Areas become so impacted that users begin to seek other locations.

The Park Manager must be vigilant to spot these trends early and initiate corrective practices such as liming, fertilization, corrective pruning and keeping mulched walking paths well mulched with composted wood chips. The removal of exotic invasive species is an intensive recurring task. Smaller plants can be hand pulled. However, the most effective strategy for eradication is cutting and spraying the freshly cut stump with a small quantity of triclopyr. All chemicals need to be pre-approved and applications must be documented. Brush should be chipped and blown into the forest if possible, or in turf areas. Wood chips should be composted in another location. Age diversity in the canopy layer is a long-term goal. Ideally the trees should be of all ages with every stage present from newly established plants to past maturity.

1) Tree Maintenance Level I: Less than 5% invasive species and less than 5% deadwood. These areas are characterized by grass under trees on gently rolling topography. It is a pleasant open area for sitting in, picnicking on grass or just walking through. The nature of the topography is critical as the grass must be capable of being mown 3-4 times annually. Walking paths through the long grass can be cut shorter and more often. The actual frequency of mowing depends on the density of the tree canopy and park setting. Trees are inspected and pruned as necessary for health and safety biannually, and thinned out every five years. Trash is collected weekly.

2) Woodland Level II: Less than 10% invasive species and less than 10% deadwood. These areas are characterized by understory shrubs and seedlings of trees under major tree canopy. These areas are natural areas and serve to provide a visual screen or buffer to more intensively used areas and habitat for wildlife. Use is typically low and informal. They require a low level of maintenance, but a high level of skill for management and implementation to work. The objective in the woodland areas is to sustain a continuous tree cover with the area being regenerated naturally. Both the canopy and understory will be managed on a 10-year cycle. Natural regeneration may, on occasion, be enriched by planting if the desired species do not regenerate naturally. Trees are safety pruned every five years; hazard trees are removed as required and invasive species both exotic and native are removed or controlled. Trash pickup will be monthly.

Maintenance Recommendations for the Control of Invasive Species:

The goal of the Resource Management Plan (RMP) is threefold, to maintain pedestrian access to the Reservation where people can experience the natural setting, to develop maintenance recommendations to control invasive species, and to propose native plantings that provide enhanced wildlife habitat. In order to meet this goal, the objectives of the RMP are to enhance and expand native species in appropriate locations, remove and prevent the dissemination of invasive species, and propose that plantings that maintain a desirable vegetative community comprised of diverse species be developed. The RMP proposes resource management recommendations to provide for the long-term maintenance of vegetation within the site, provide landscape continuity with the existing historic features within the Reservation, and enhance wildlife habitat. Maintenance of these resources will also be contingent upon proposed activities as they are developed for the site.

Development of a long-term, comprehensive natural resource plan for maintenance is essential to enhance the aesthetic value, visitor use, and appreciation of the site. This RMP focuses on invasive plant species management and maintenance, as well as, management of nuisance wildlife issues within the site. Virtually every habitat within the Reservation contains one or more invasive plant species, including

Oriental Bittersweet (*Celastrus orbiculatus*), Black Locust (*Robinia pseudoacacia*), Norway Maple (*Acer platanoides*) European Buckthorn (*Rhamnus frangula*), Multiflora Rose (*Rosa multiflora*), Purple Loosestrife (*Lythrum salicaria*), and Garlic Mustard (*Alliaria officinalis*). Poison Ivy, although not considered an invasive species by the Massachusetts Department of Agriculture, presents a maintenance challenge within the site as it occurs as a low-growing groundcover and as a climbing vine that winds around trees and shrubs within the upland portions of the site.

A brief description of the maintenance options, biological, manual, and/or chemical are outlined below. As with all maintenance, the control efforts must balance improvement of the natural community with the disruption caused by the management. In all recommendations, the RMP assumes it is always best to take the least damaging approach that will affect the desired control of an exotic.

As part of the control of exotic species a follow-up of native species plantings should be installed throughout the site in order to provide a vegetated buffer. In the future it will be necessary to develop a comprehensive planting plan that includes native trees, shrubs, and groundcover species that will flourish to provide a vegetative buffer that can help control exotic invasion, as well as, provide more desirable aesthetic viewsheds and enhanced wildlife habitat.

Oriental Bittersweet (*Celastrus obiculatus*)

Oriental bittersweet was observed entwined amongst the upland mature and sapling trees throughout the site. The removal of Oriental bittersweet is best accomplished by manual cutting and removal of these persistent vines. A moderate amount of Oriental bittersweet was observed within the upland trees and saplings located in the northeastern corner of the Reservation.

Black Locust (*Robinia pseudoacacia*)

Scattered black locust saplings were observed within the successional shrub habitat. Biological control agents are not available to check the invasion of Black Locust. Manual cutting or removal of the trees alone is also not an effective maintenance option. In order to effectively discourage the growth and dispersion of Black Locust, a combination of manual cutting and removal combined with a comprehensive chemical treatment of the stumps and shoots is the most effective means of maintaining this invasive species. A direct application of glyphosate solution applied to stumps cut near the ground is typically recommended.

Norway Maple (*Acer platanoides*)

Scattered Norway Maple was observed on the drumlin hill and particularly within the lawn area located between Chestnut Hill Driveway and the residential apartment buildings.

Biological control agents are not available to check the invasion of Norway Maple. Manual cutting or removal of the trees alone is also not an effective maintenance option. In order to effectively discourage the growth and dispersion of Norway Maple, a combination of manual cutting and removal combined with a comprehensive chemical treatment of the stumps and shoots is the most effective means of maintaining this invasive species. A direct application of glyphosate solution applied to stumps cut near the ground is typically recommended.

One alternative to manual removal of mature Norway Maple is to leave the trees in place and discontinue any further planting of this invasive species. According to the Massachusetts Department of Agriculture (DoA), Invasive Plants Association of New England (IPANE), a two-step phase out of Norway Maple is planned for the state of Massachusetts. Specifically, the importation of Norway Maple is banned by the DoA beginning January 1, 2006 and in-state nurseries will be prohibited in from selling and distributing this invasive species on January 1, 2009.

European Buckthorn (*Rhamnus frangula*)

Clusters of European Buckthorn were frequently observed along the embankment to the Reservoir and within the forested upland habitats, with scattered individuals observed within the successional shrub habitat.

No effective biological controls of European Buckthorn that are feasible are known at this time. Accordingly, eradication of European Buckthorn is best accomplished through a combination of manual removal and herbicide application. Herbicide treatments are available to aid in the defoliation of this invasive species as part of a long-term maintenance plan. Treatment includes application of herbicides, such as Garlon, which is a selective herbicide that can be applied on cut European Buckthorn stumps. Application of herbicides should be made within a few hours of cutting and are best applied during the dormant season, as this reduces the potential for the herbicide to drift onto non-target plants. Because plants that appear to have been killed can resprout even several years after treatment with herbicide, annual monitoring should be conducted and follow-up treatments made as needed. The RMP recommends a combination of manual removal of European Buckthorn shrubs and seedlings with a follow up application of herbicides.

Multiflora Rose (*Rosa multiflora*)

Multiflora Rose within the site is relegated to the drumlin hill within the northeastern corner of the property. No effective biological controls that prohibit multiflora rose growth are known at this time. Rose rosette disease is a sometimes fatal viral disease that attacks Multiflora Rose; however, this disease is not considered an effective biological control because it may infect other rose species, as well as apple trees, plum trees, and some types of berries.

The spread of Multiflora Rose can be hindered by repeated cutting during the growing season. All stems should be cut, and new stems that appear should also be removed in the same growing season. This treatment will most likely need to be repeated for several years to achieve adequate control. To supplement the repeated cutting technique, a combination of manual removal followed by herbicide application is generally recommended. Painting the herbicide on the cut stump with a sponge applicator kills root systems and discourages the plant from resprouting. Glyphosate has been effective in controlling Multiflora Rose when applied directly to the cut stump. With this technique, herbicide is applied specifically to the target plant, reducing the possibilities of damaging nearby, desirable vegetation. Chemical application to cut stumps is best accomplished during the dormant season. Application in the dormant season is preferred because it will minimize potential harm to non-target species. Because plants that appear to have been killed can resprout even several years after treatment with herbicide, annual monitoring should be conducted and follow-up treatments made as needed.

Purple Loosestrife (*Lythrum salicaria*)

Purple Loosestrife is one of the dominant plants vegetating the banks of the Reservoir. Manual removal and chemical applications of herbicide to control Purple Loosestrife is generally considered an ineffective means of removal given the prolific seed production and extent of the root system and the plants associated ability to flourish and germinate. This

invasive species produces copious amounts of seeds, up to 250,000 seeds per plant annually, and possesses a strong taproot that continues to provide food to the plant when it is mowed, sprayed with herbicides, or damaged by insects. Accordingly, LEC has investigated the biological control of Purple Loosestrife through literature review and first hand experience documenting the effectiveness of releasing *Galerucella* beetles to eradicate this plant species.

Galerucella beetles, a species that targets Purple Loosestrife and feeds on the leaves, shoots, and stems to defoliate these invasive plants. Though an exotic species themselves, the use of *Galerucella* spp. as a biological control for *L. salicaria* has proven effective, with a success rate of up to 90% in other areas of North America without visible environmental repercussions (Blossey, 2001, Blossey and Schroeder 1995). The United States Department of Agriculture–Animal Plant Health Inspection Service has approved the release of *Galerucella* for *L. salicaria* control and the beetles have been released in over 30 states. Additionally, the Minnesota, Michigan, and Wisconsin Departments of Natural Resources have been releasing the beetles since 1994 to manage *L. salicaria* (Blossey, 1997) and Massachusetts has been using them effectively since 2000.

Adults inflict a shothole feeding pattern eating small (1-2 mm) holes through foliage. Adult and larval feeding upon the buds results in stunted plants and reduced seed production. Larval damage to flower and shoot buds reduces plant growth and inhibits flowering. Adult and larval leaf damage greatly reduces the photosynthetic capability of *L. salicaria*, possibly leading to reduced starch stores in the roots which can result in winter plant mortality. Photosynthetic inhibition results in reduced stem height and root length, both essential to overall plant vigor. With heavy defoliation, the host plant becomes skeletonized and turns brown. Heavily defoliated plants may die or produce fewer shoots the following year. The resultant weakening and/or death of the loosestrife plants provide an opportunity for previously out-competed native plant species to return.

Garlic Mustard (*Alliaria officinalis*)

Scattered patches of Garlic Mustard were observed throughout the forested portions of the property. Garlic Mustard spreads from established patches of infestation along an invasion front. Satellite infestations occur when seeds are transported by wind or wildlife into new areas, most often along trails, roads or forest edges. Top priority should be given to annual removal of all satellite infestations to prevent further spread.

Biological control of garlic mustard is being explored by a consortium coordinated through Cornell University numerous state and federal partners. To date, an effective biological control agent that feeds exclusively on Garlic Mustard has not been identified. Accordingly, LEC has prepared recommendations based on the size of the infestation (local) and associated ease of removal. Removing individual garlic mustard plants manually is the simplest and most cost effective approach to maintaining small or isolated infestations. When pulling plants, it is important to remove the stem as well as the entire root system, since buds located within the root crown can produce additional stems. All pulled plants should be removed from the site as seed ripening continues even after plants are pulled. Repeated hand pulling of garlic mustard is reported to be effective for control in small areas, but has limitations and is labor intensive. Specifically, seeds remain viable in the soil for up to five years so it is necessary to remove all Garlic Mustard in an area every year until the seed bank is exhausted and seedlings no longer appear. This will require multiple efforts each year as rosettes can continue to bolt and produce flowers over an extended period (April-June). Accordingly, manual Garlic Mustard removal should be part of the long-term maintenance.

Poison Ivy (*Toxicodendron radicans*)

During the inventory phase Poison Ivy was an observed groundcover species around the perimeter of the Reservoir along with climbing vines within the upland portions of the site.

Since Poison Ivy is not a listed invasive species, a feasible option is to leave the plants undisturbed and post signage warning visitors of Poison Ivy exposure. Poison ivy is a native species to New England and therefore its natural control agents are already present. Consequently, biological control is not an option for the control of Poison Ivy. Burning this invasive species to remove it from an area is never recommended for the control of poison ivy, as it creates a serious health hazard and does not effectively reduce infestations). Due to the prevalence of Poison Ivy within the site combined with the public hazards it

presents, control of this species is likely best accomplished with the complete manual removal of the plant followed by periodic chemical applications and monitoring.

In order to effectively eradicate Poison Ivy utilizing the manual removal method, the entire plant must be removed. When the soil is wet, the roots should be dug up and removed completely from the soil as any root sections left will sprout. Manually removing the roots and stems will diminish the ability of the plant to produce shoots will be minimized. Repeated cultivation will eventually eliminate Poison Ivy because the plant does not regenerate easily from plant fragments. Climbing vines of Poison Ivy, like those found within the upland sections of the site, can be cut and pulled from the trees, fence posts, and other structures. Manual removal of Poison Ivy should be best accomplished in the winter when the plants are dormant. Poison Ivy clippings and roots should be transported from the site and disposed of properly.

Another option available to remove poison ivy includes chemical application of herbicides, including glyphosate. Leaves can be selectively painted with the solution using a disposable brush or cotton rag and spot treatment will minimize the chance of the herbicide drifting onto adjacent, desirable vegetation. Repeated applications of herbicide may be necessary. It is important to note that glyphosate is a nonselective compound and will damage or kill other vegetation it contacts.

General Features

Structures:

All buildings and structures should be inspected and their condition recorded annually. New work necessary because of changes in use should meet the state building code. Alterations for accessibility should be carefully designed. Work required to stabilize the structures, prevent vandalism, and prevent insect or animal damage should be considered a high priority and implemented immediately.

All structures are assumed to be Level I; however the particular problem or situation may necessitate a specific response. Small, routine in-house repairs are done within 3-5 working days. Contracted repairs are assessed within 3-5 working days. Annual maintenance is done yearly. The Standards pertain to structures of all materials, construction types and sizes. Standards for Preservation:

- The existing condition of structures will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature of a structure, the new material will match the old in composition, design, color, and texture.
- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to existing materials will not be used.

Furnishings:

Maintenance of park site furnishings includes:

- Benches - repair, replacement, painting.
- Trash cans - emptying, repair, replacement.
- Bicycle racks – repair, replacement.
- Lighting - repair, replacement.
- Drinking fountains - cleaning, repair, seasonal turn on in spring and winterization in fall.
- Signage – repair, replacement.
- Graffiti removal – as required.

Regular maintenance of the park's site furnishings is an important task, which is often overlooked or only done on an emergency basis. Keeping park furnishings in good repair makes for a more inviting and usable park. The furnishings should be inspected weekly and routine repairs done within 3-5 working days.

DCR should consider standardized furnishing, which will reinforce the signature character of the park while adding visual continuity of green space. In addition, maintenance is easier if there is one bench style. Repairs are more likely to be done with “available materials” or not done at all when too many options exist.

Paths and Paved Surfaces:

- 1) Paved Surfaces Level I:** Less than 2% in degraded condition. Paths should be cleaned when there is a noticeable accumulation of debris. Leaf pick-up will be weekly in fall season and in early spring.
- 2) Paved Surfaces Level II:** Less than 5% degraded condition. Paths should be cleaned when there is a noticeable accumulation of debris. Leaf pick-up will be bi-weekly in fall season and in early spring.
- 3) Path Maintenance Level III:** More than 5% degraded condition. Repair stonedust and asphalt paths, including minor repairs, grading and potholing as necessary. Leaf pick-up will be once in fall season and once in early spring.

Trash Removal

The park system should be clean and free from trash and litter. Trash receptacles should not be overflowing and litter should be kept to a minimum. Maintenance affects appearance of the park and sanitary conditions, including litter pick-up and collection of trash from receptacles.

- 1) Trash Removal Level I:** Zero overflowing cans; minimum servicing of once a day 7 days/week. To maintain no overflowing cans it may require more than one servicing/day and event or special use may dictate more frequent cleaning.
- 2) Trash Removal Level II:** Zero overflowing cans; minimum servicing of once a day 5 days/week. Event or special use may dictate more frequent cleaning. Event or special use may dictate more frequent cleaning.
- 3) Trash Removal Level III:** Zero overflowing cans; minimum servicing of 2 to 3 times/week. Litter barrels should be emptied up to 3 times per week from April through October and weekly during the winter. Event or special use may dictate more frequent cleaning.

Graffiti Removal

Maintenance standards for graffiti removal are followed unless graffiti involves an historic structure that requires historic preservation notice or authorization.

- 1) Graffiti Removal Level I:** Graffiti removed within 24 hours.
- 2) Graffiti Removal Level II:** Graffiti removed within 48 hours.